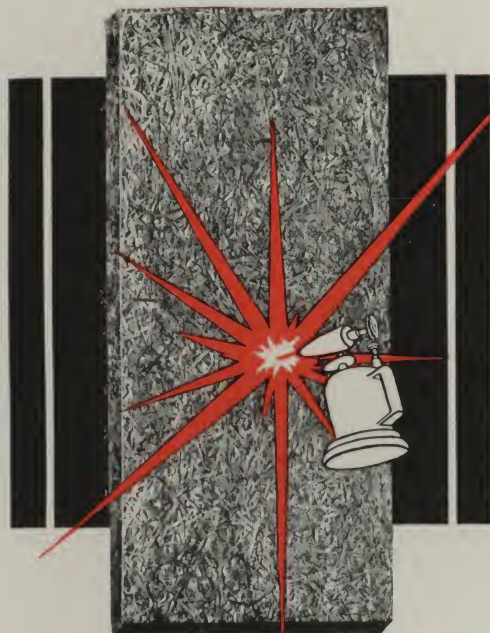


THERMAX

The FIREPROOFING INSULATION

ABSORBEX

ACOUSTICAL CORRECTIVE



SPECIFICATIONS

AND

TECHNICAL DATA

1936 *Edition*

THERMAX

Made by

THERMAX DIVISION, NORTHWEST MAGNESITE CO.
FARMERS BANK BUILDING, PITTSBURGH, PA.

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FOREWORD

● **THERMAX—THE FIREPROOFING STRUCTURAL INSULATION**—Thermax, has been used extensively in continental Europe since 1918 under the trade name of **Heraklith** and there has won recognition and ready acceptance in building industry.

This long period of actual demonstration under varied building and climatic conditions from Iceland to tropical Palestine has established the unique and practical characteristics of this insulation. Sales, world wide, to date have been over **300,000,000 board feet**. In the United States, Thermax has been made and marketed nationally for over five years.

The outstanding characteristics of Thermax are:

(1) **Insulation**—It ranks high in thermal insulation efficiency used in the thicknesses manufactured, namely 1 in., 2 in., and 3 in.

(2) **Fireproofing**—Tested and rated incombustible by the Underwriters' Laboratories, it is the only structural insulation board or slab possessing the qualification of fireproofing and so approved by City, State and Federal Departments.

(3) **Structurally Strong**—Thermax satisfies code requirements for incombustible, self-supporting insulating roof decks and non-bearing partitions, sheathing or lathing.

(4) **Sound-Deadening**—2 in. (3 in. overall) Thermax plastered partitions transmit less than one-fifth of one per cent of sound (99.82% reduction).

(5) **Sound Absorption**—Absorbex Acoustical Corrective, a Thermax product, combines high efficiency with incombustibility and an attractive, repaintable surface.

Due to these unique attributes, Thermax has received ready acceptance by architects in the United States and has been used from coast to coast in a noteworthy list of outstanding buildings.

● **THE COMPANY**—Thermax is a division of the Northwest Magnesite Company of Chewelah, Washington, which mines and calcines the largest output of magnesite in the United States. Magnesite is a high-temperature refractory material used extensively in the steel industry.

The Company is adequately financed to take care of all production requirements in connection with a nation-wide demand for Thermax materials.

● **MANUFACTURING FACILITIES**—The large, completely modern Thermax plant in Chewelah, Washington, is adjacent to that of the Northwest Magnesite Co. The Company, therefore, has complete control of every step in the manufacture of its products—first because its plant equipment is new and of the latest type and, second, because the plant is located in the heart of the source of its raw materials, timber and refractory cement. Thus is assured uniformity and economical production costs.

● **SERVICE**—The Company maintains an experienced engineering department in connection with its General Sales Office at Pittsburgh. In addition, it is nationally represented in the principal cities. All local representatives are experienced in the insulation and noise abatement fields and are qualified to cooperate (without obligation) with the architect in the establishment of basic requirements or the solution of their various problems.

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THERMAX DIVERSIFIED ADAPTABILITY

● FRAME BUILDING INSULATION—

(1) **As Sheathing and Roof Decking**—The full one (1) inch or two (2) inch thickness of structural Thermax as against ordinary $\frac{7}{16}$ in. or $\frac{1}{2}$ in. fiber-board insulation is an economy. The added fuel savings and comfort more than compensate for any slight added cost. The fireproofing feature alone should influence its choice. Structurally it is an ideal sheathing and roof decking material.

As an exterior stucco base it is practically inert so far as contraction and expansion are concerned and the bond between the stucco and the Thermax surface is equal to that of the best masonry stucco base. Two (2) inch Thermax is recommended for stucco base because the effect, using standard brick veneer frames, is the same as in a masonry building with a masonry reveal (see detail, page 10).

(2) **As Interior Plaster Base**—On walls and ceilings it is an ideal fireproofing and sound-deadening plaster base—strong bond, no expansion or contraction. On basement ceilings it reduces the fire hazard to a minimum.

(3) **As a Floor Slab**—Where a composition floor (linoleum, asphalt tile, rubber tile, etc.) is practical or appropriate, Thermax (3 in. thickness) finished with a topping of Portland cement mortar (1 : 3 mix) troweled smooth, provides the structural sub-floor or base for these materials (maximum joist spacing 24 in. o.c.). It is also an ideal base for ceramic and other finishes.

So used, a cement floor in attics is economically practical and materially lessens fire risk.

Beside the benefits of heat insulation, sound deadening is an inherent quality of Thermax.

● INDUSTRIAL ROOF DECK INSULATION—

Thermax units are high in insulation value in the three thicknesses marketed—1, 2, and 3 in.—and where required **over wood, concrete or steel roof decks** are laid in one operation in the required thickness—a labor economy. Thermax presents a firm insulating base for built-up roofing.

● FIREPROOF, INSULATING STRUCTURAL

ROOF SLABS—Used as **precast roof slabs** in conjunction with steel roof framing, Thermax (2 and 3 in. thick) is easily and inexpensively erected and is a rigid base for built-up finished roofing on industrial buildings. The exposed underside may be painted with aluminum or light reflecting cold water or oil paint, producing an efficient, attractive, and inexpensive acoustical treatment for auditoriums, gymnasiums, armories and other structures where sound quieting is desired. It may also be plastered with gypsum, lime or cement plaster.

● FIREPROOF, INSULATING STRUCTURAL

FLOOR AND CEILING SLABS—For use as **structural floor slabs** in residential construction in conjunction

with **Steel Joists** and **Junior Beam** or **Steel Deck Constructions**. Light weight, structural strength, definite fireproofing, heat and sound insulation and an ideal base for cement, tile, terrazzo, and similar floor finishes are the salient characteristics.

Used as a 2 in. thick **fireproof ceiling slab**, it adds a practical and definite fire protection to these light steel constructions, hitherto difficult to accomplish. It provides a perfect plaster base or if painted only (unplastered), it is highly sound absorbent.

● FIREPROOF PARTITIONS (NON-BEARING)—

(1) **2 in. Thick with Steel Studs**—Fulfills 1 hour fireproofing requirements, using 1 in. thick Thermax units clipped between 1-in. steel channels, plastered both sides (2 in. thick finished). These partitions are erected rapidly, dry out quickly, are light in weight and stable.

(2) 2 in. and 3 in. Thick Partition Blocks—

Fulfills 1 and 2 hour fireproofing requirements, respectively. The Thermax units 2 and 3 in. thick x 20 in. wide x 32 or 64 in. long are easily handled due to their light weight. They are quickly erected with mortar (Portland cement, gypsum or lime) the same as gypsum or clay tile partition blocks and are plastered both sides, finishing 3 in. and 4 in. thick, respectively. Cutting and fitting are easily accomplished with ordinary tools.

● **THERMAX PLANKS**—Thermax slabs 2 and 3 in. thick and 20 in. wide may be obtained on special order in ceiling height lengths. Easily and rapidly erected with clips and plastered (no studs).

● NOISE ABATEMENT—

(1) **Partitions**—2, 3 and 4 in. thick Thermax block partitions have exceptional value for sound deadening or sound isolation purposes (see page 20 for test data).

(2) **Acoustical Correction**—Absorbex Acoustical Corrective is a highly efficient, incombustible sound absorptive. The Type C (standard Thermax slabs) may be laid in concrete floor construction forms, producing an economical ceiling acoustical correction.

The Type A or Type B Absorbex tile applied to walls or ceilings ranks high in sound absorption efficiency and harmonizes with any architectural treatment.

● LOW COST HOUSING CONSTRUCTION—

The Thermax Division, Northwest Magnesite Co. has developed **fire-safe, insulated** and **vermin-proof** practical assembly designs to conform with various building requirements in the low cost housing field. Stock materials of steel, concrete, and Thermax Insulation are combined in simple assemblies, greatly reducing labor and erection costs, placing these more livable and salable houses in direct competition with ordinary, less permanent constructions.

THERMAX MANUFACTURING PROCESS

● **RAW STOCK**—Thermax is made by combining two basic materials—long, tough wood shreds which are completely coated with fire resisting cement. The cellular wood fibers alone have an established high insulation value, which is increased by the air containing interstices between the fibers when these are interlaced and cemented together.

● **DETAILS OF PROCESS**—Thermax is produced in one continuous mechanical operation that shreds the timber into long fibers; passes these fibers through a binding emulsion of fire resisting cement; rolls and forms this mass into boards or slabs exactly 1 in., 2 in., and 3 in. thick by 20 in. wide and dries and cuts the product into standard lengths.

PHYSICAL CHARACTERISTICS—ADVANTAGES

● **TESTS**—All data is substantiated by standard tests conducted by recognized authorities: Underwriters' Laboratories, Inc., U. S. Bureau of Standards, Columbia University, Massachusetts Institute of Technology, Pittsburgh Testing Laboratories, Riverbank Laboratories, Inc., etc.

● **SIZES**—

Thicknesses—Thermax is made 1, 2, and 3 in. thick. An axiom of insulation efficiency is that a sufficient thickness of insulation must be used. The outstanding advantage of Thermax as an insulating material is the greater thickness combined with structural strength at lower cost.

Area—Thermax in each thickness is made 20 in. wide x 32, 48, and 64 in. long. Longer lengths up to 9'0" can be furnished on special order.

● **WEIGHT**—

- 1-in. Thermax—2.2 lbs. per sq. ft. (approx.).
- 2-in. Thermax—4.4 lbs. per sq. ft. (approx.).
- 3-in. Thermax—6.6 lbs. per sq. ft. (approx.).

● **FIREPROOFING—Thermax Passes Rigid Fire Tests. It has been Rated by Underwriters' Laboratories and Re-examination Service Maintained**

Thermax non-bearing partitions are approved for use in fireproof construction by the Boroughs of the City of New York as well as by the Building Departments of the leading cities in the United States and Europe and are rated without insurance penalty by the National Board of Fire Underwriters.

Thermax (Absorbex) is approved by building departments as incombustible trim in fireproof construction left exposed for acoustical treatment.

3-in. Partitions—Thermax 2 in. thick blocks laid up with mortar, plastered each side with 1/2 in. of plaster, satisfactorily passed the fire endurance and fire hose stream tests at the Underwriters' Laboratories at Chicago and is rated 1 hour incombustible for non-bearing partitions in fireproof construction.

4-in. Partitions—Thermax 3 in. thick masonry block partitions plastered two sides have passed the 2 1/4 hour fire endurance and hose stream tests in accordance with the current specifications of the American Society for Testing Materials. (Test conducted by the U. S. Bureau of Standards.)

The 3 in. plastered (4 in. finished) Thermax non-bearing partitions have passed the 1 hour fire endurance and hose stream tests required by the Building Departments of the Boroughs of the City of New York. (Tests conducted by Columbia University.)

2 1/2-in. Partitions—1 in. Thermax Slabs, between steel studs 20 in. on center, plastered 3/4 in. each side, successfully passed the Standard Fire Endurance and Fire Stream Test at U. S. Bureau of Standards for a one hour rating (non-bearing).

● **THERMAL CONDUCTIVITY**—The thermal conductivity of Thermax Fireproofing Insulation is slightly higher than combustible fiberboard insulations. However, the minimum thickness of Thermax is 1 in., whereas ordinary insulation boards as marketed are 1/8 in. and 1/2 in. in thickness, resulting in an actual efficiency of one half or less of their rating based on the 1 in. thickness as tested.

The thermal conductivity of Thermax established by Prof. J. C. Peebles, Armour Institute (flat plate method) is:

- 1 in.—0.458 B.t.u. per hr., per sq. ft., per deg. F.
- 2 in.—0.229 B.t.u. per hr., per sq. ft., per deg. F.
- 3 in.—0.153 B.t.u. per hr., per sq. ft., per deg. F.

● **SOUND INSULATION**—Thermax has remarkable sound insulation properties. Tests made on 2 in. thick block partitions, plastered (base and finish coats), establish that the per cent of the incident sound transmitted through the construction is only 0.18% (less than 1/5 of 1%) at a frequency of 512 cycles. (Massachusetts Institute of Technology.)

Thermax blocks or slabs are recommended for sound deadened partitions and sound isolation for machinery rooms, broadcasting studios, and sound filters, baffles and ducts in air conditioning systems. (See details and test data, page 20.)

● **MOISTURE RESISTANCE (CAPILLARITY)**—With one edge immersed in water, moisture in four (4) days rises to an average of but 3 in. in the slab. No further rise occurs for the next six (6) days. After drying, Thermax has the same strength as it had originally (University of Washington test). Non-absorption not only is essential to sanitation but to insulating efficiency.

● **STRUCTURAL STRENGTH**—Tests (Pittsburgh Testing Laboratory) determine that Thermax fulfills all practical requirements for roof decks.

Slabs were placed on flat supports spaced 24 in. or 16 in. o.c. and a central load applied over 1 in. x 3 in. plate in increments up to ultimate failure, deflections being measured and corresponding loads recorded.

The results of these tests showed that the maximum load per sq. ft. for 2 and 3 in. Thermax at 24 in. span between supports is 210 and 345 lbs., respectively and for 2 in. Thermax at 16 in. span is 765 lbs. per sq. ft. (for complete table of tests, see page 8).

Impact—A 1 in. topping of Portland cement mortar was applied on top of 2 in. thick Thermax blocks. Samples were kept moist for one week, then thoroughly dried. The concrete topping was then subjected to 20,000 blows of 600 lbs. per sq. in. concentrated at one point. There was no cracking of the concrete topping or loosening of the bond between the concrete and Thermax slab (University of Washington).

● **FIRM ROOF FOUNDATION**—Where used as structural roof slabs or as insulation over roof decks, Thermax provides a firm surface as foundation for the application of built-up finished roofing. There is no danger of puncturing the finished roofing material under normal wear and tear.

● **EXPANSION AND CONTRACTION**—In Europe, Thermax (under the name of Heraklith) has been in use extensively for over seventeen years as an exterior stucco and interior plaster base. Installations here and abroad show no defects due to expansion or contraction of the base under the various climatic conditions encountered.

● **PORTLAND CEMENT STUCCO AND PLASTER BOND**—(Test conducted by Columbia University.) Sample Thermax Boards 1 in. thick, selected at random from stock, were securely attached to wood blocks furnished with exposed pull rings. The Thermax surfaces of each specimen, thus prepared, were bonded together with standard gypsum plaster. A series of six tests were made on slabs thus bonded resulting in an average of 317 lbs. per sq. ft. Failure in each case occurred by separation in the wood fibers. See also impact test above.

Note: 60 lbs. per sq. ft. is the accepted standard for bonding strength for gypsum plaster and 200 lbs. per sq. ft. for portland cement, poured in place (U. S. Government Specification).

● **STERILITY**—Made of clean, shredded wood, with each strand coated with high temperature cement, Thermax is odorless and affords no food value to attract insects. The cement coating successfully prevents attack by rodents.

● **TERMITE PROOF**—Thermax (under the name Heraklith) has been used under close observation for many years in tropical Europe in regions infested by the white ant or termite. No instance of termite damage has ever been discovered. The hard, refractory cement coating of every wood shred apparently resists termite attack.

● **CHEMICAL ANALYSIS**—Assurance that there is no detrimental corrosive effect when Thermax is erected in contact with steel is given in the following chemical analysis showing negligible magnesium chloride. (Test by Penniman and Browne, Consulting Chemists, Baltimore.)

The water soluble content of Thermax is but 4.39% of the total weight consisting largely of alkaline material arranged as follows:

Magnesium sulphate	92.71%
Magnesium chloride	1.48%
Calcium hydrate	5.80%

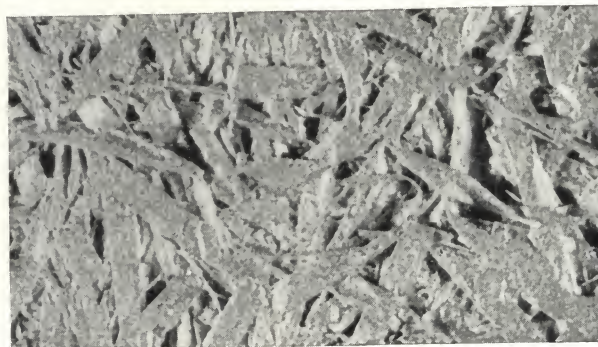
● **DURABILITY—FUNGI PROOF**—In addition to being moisture resistant, the cement coated wood shreds in Thermax are definitely sealed against attack by fungus growth. Under actual use abroad for many years no instance of deterioration has been discovered. (Vienna Technical Society report.)

Dry Rot tests conducted in U. S. by University of Idaho (Forestry Dept.) give Thermax a 100% rating against fungus.

● **UNIFORMITY**—Uniformity of raw materials, complete laboratory control and rigid factory supervision plus Re-examination Service by the Underwriters' Laboratories assure a uniform product.

● **REASONABLE COST**—Compared with other insulation of equal thickness or efficiency, but lacking the fire-resisting and structural characteristics of Thermax, the cost of Thermax is low.

● **LOW LABOR INSTALLATION COST**—Thermax is easily and rapidly erected by the ordinary mechanic. It saws like lumber where fitting is required. The light weight of the units makes one man handling convenient and the large boards or slabs with a surface area of approximately 1 sq. yd. combines speed with economy.



A FULL SIZE SECTION OF THERMAX

TYPICAL INSTALLATIONS



TIMES BUILDING, LOS ANGELES, CALIF.

Architect—Gordon B. Kaufman

Thermax Fireproof Structural Slabs for Insulation and Sound-deadening



THERMAX FIRE-SAFE HOUSE, PITTSBURGH, PA.

Designer—Q. S. Beck

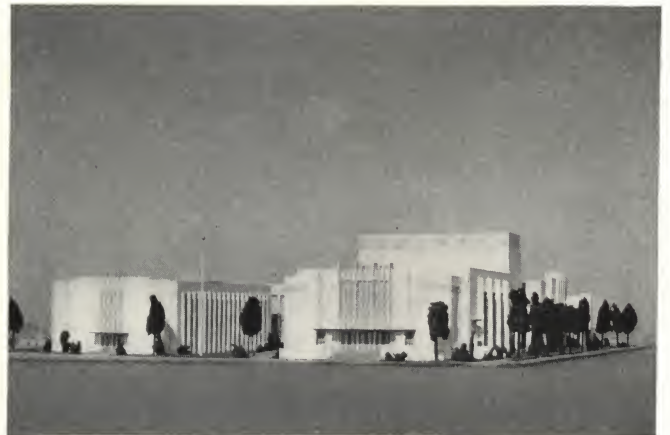
Thermax Walls, Floors, Partitions and Roof



STEEL FRAME AND THERMAX RESIDENCE

Architect—Hillard Russell

Thermax Structural Insulation for Exterior Sheathing and Stucco Base



ALEXANDER HAMILTON, JR. HIGH SCHOOL, LONG BEACH, CALIF.

Architects and Engineers—Schilling and Schilling

Steel Frame, 1 in. Thermax Exterior Stucco and Interior Plaster Bases



MELLON INSTITUTE, PITTSBURGH, PA.

Architect—Janssen and Cocken

Absorbex Type "A" Tile for Acoustical Corrective



YALE CLUB, NEW YORK CITY

Architect—Fuller and Dick

Tap Room—Acoustical Ceiling of Absorbex Type A

TYPICAL INSTALLATIONS



EAST LIBERTY PRESBYTERIAN CHURCH, PITTSBURGH, PA.
Architects—Cram and Ferguson, Boston
Thermax Sound-Deadening and Thermal Insulation;
Absorbex Type A Acoustical Treatment



ROCKEFELLER CENTER, NEW YORK CITY
Non-Inflammable Thermax in Air Conditioning Systems in Radio City
Music Hall and Center Theatre
Architects—Rheinhard and Hofmeister; Corbett, Harris and MacMurray;
Hood and Foulhoux



DEPARTMENT OF JUSTICE BUILDING, WASHINGTON, D. C.
Absorbex Acoustical Corrective for Courtrooms



UNITED STATES CUSTOMS HOUSE AND APPRAISER'S STORES
PHILADELPHIA, PA.
Absorbex Acoustical Treatment applied to Thermax Base

HEAT TRANSMISSION COEFFICIENTS As Applied to Various Standard Constructions

TABLE I. H.T.C. of Pitched Residential Roofs

No.	Type of roofing	Insulation over rafters	Type of ceiling and plastering			
			None	Wood lath	1 in. Ther.	2 in. Ther.
1	Wood shingles	None	0.48	0.29	0.15	0.10
2	Composition r'f'g	None	0.56	0.32	0.16	0.11
3	Slate or tile r'f'g	None	0.56	0.32	0.16	0.11
4	Wood shingles	1 in. Ther.	0.24	0.15	0.10	0.09
5	Wood shingles	2 in. Ther.	0.16	0.12	0.09	0.08
6	Composition r'f'g	1 in. Ther.	0.32	0.17	0.13	0.11
7	Composition r'f'g	2 in. Ther.	0.24	0.14	0.11	0.09
8	Slate or tile r'f'g	1 in. Ther.	0.32	0.17	0.13	0.11
9	Slate or tile r'f'g	2 in. Ther.	0.24	0.14	0.11	0.09

TABLE II. H.T.C. of Frame Walls

No.	Sheathing	Plaster base		
		Wood lath	1 in. Thermax	2 in. Thermax
1	1 in. Wood	0.25		
2	1 in. Wood		0.17	
3	1 in. Wood			0.11
4	1 in. Thermax	0.20		
5	1 in. Thermax		0.14	
6	1 in. Thermax			0.10
7	2 in. Thermax	0.12		
8	2 in. Thermax		0.10	
9	2 in. Thermax			0.08

TABLE III. H.T.C. of Stucco over Frame Walls

No.	Sheathing	Plaster base		
		Wood lath	1 in. Thermax	2 in. Thermax
1	1 in. Wood	0.30		
2	1 in. Wood		0.19	
3	1 in. Wood			0.12
4	1 in. Thermax	0.23		
5	1 in. Thermax		0.16	
6	1 in. Thermax			0.12
7	2 in. Thermax	0.14		
8	2 in. Thermax		0.11	
9	2 in. Thermax			0.09

TABLE IV. H.T.C. of Brick Veneer over Frame Walls

No.	Sheathing	Plaster base		
		Wood lath	1 in. Thermax	2 in. Thermax
1	1 in. Wood	0.27		
2	1 in. Wood		0.18	
3	1 in. Wood			0.12
4	1 in. Thermax	0.20		
5	1 in. Thermax		0.15	
6	1 in. Thermax			0.10
7	2 in. Thermax	0.13		
8	2 in. Thermax		0.10	
9	2 in. Thermax			0.09

TABLE V. H.T.C. of Stucco on Hollow Clay Tile Walls

No.	Interior construction	Thickness of hollow tile		
		8 in.	10 in.	12 in.
1	1/2 in. plaster direct on tile	0.37	0.37	0.29
2	1/2 in. pl. on wood lath; furred	0.26	0.26	0.22
3	1/2 in. pl. on 1 in. Thermax on tile	0.20	0.19	0.17
4	1/2 in. pl. on 2 in. Thermax on tile	0.13	0.13	0.12
5	1/2 in. pl. on 1 in. Thermax; furred	0.16	0.16	0.14
6	1/2 in. pl. on 2 in. Thermax; furred	0.11	0.11	0.10

TABLE VI. H.T.C. of 4 in. Br. Veneer on H.C. Tile Walls

No.	Interior construction	Thickness of hollow tile		
		6 in.	8 in.	10 in.
1	1/2 in. plaster direct on tile	0.34	0.33	0.32
2	1/2 in. pl. on wood lath; furred	0.24	0.24	0.23
3	1/2 in. pl. on 1 in. Thermax on tile	0.17	0.18	0.18
4	1/2 in. pl. on 2 in. Thermax on tile	0.13	0.12	0.12
5	1/2 in. pl. on 1 in. Thermax; furred	0.15	0.15	0.14
6	1/2 in. pl. on 2 in. Thermax; furred	0.11	0.11	0.10

TABLE VII. H.T.C. of Solid Brick Walls

No.	Interior construction	Thickness of brick	
		8 in.	12 in.
1	1/2 in. plaster direct on brick	0.46	0.34
2	1/2 in. plaster on wood lath; furred	0.30	0.24
3	1/2 in. plaster on 1 in. Thermax on brick	0.23	0.20
4	1/2 in. plaster on 2 in. Thermax on brick	0.15	0.13
5	1/2 in. plaster on 1 in. Thermax; furred	0.20	0.18
6	1/2 in. plaster on 2 in. Thermax; furred	0.12	0.11

TABLE VIII. H.T.C. of Solid Concrete Walls

No.	Interior construction	Thickness of concrete	
		6 in.	10 in.
1	1/2 in. plaster direct on concrete	0.70	0.57
2	1/2 in. pl. on wood lath; furred	0.39	0.34
3	1/2 in. pl. on 1 in. Thermax on concrete	0.28	0.25
4	1/2 in. pl. on 2 in. Thermax on concrete	0.16	0.15
5	1/2 in. pl. on 1 in. Thermax; furred	0.22	0.20
6	1/2 in. pl. on 2 in. Thermax; furred	0.13	0.12

TABLE IX. H.T.C. of Flat Concrete Roofs

No.	Kind of insulation	Thickness of concrete		
		2 in.	4 in.	6 in.
1	None	0.82	0.72	0.64
2	1 in. Thermax	0.30	0.28	0.26
3	2 in. Thermax	0.16	0.16	0.15
4	3 in. Thermax	0.13	0.12	0.12

TABLE X. H.T.C. of Flat Wood Roofs—No Ceilings

No.	Kind of insulation	Thickness of wood			
		1 in.	1 1/2 in.	2 in.	4 in.
1	None	0.49	0.37	0.32	0.23
2	1 in. Thermax	0.24	0.21	0.19	0.15
3	2 in. Thermax	0.14	0.13	0.12	0.11
4	3 in. Thermax	0.12	0.11	0.10	0.09

TABLE XI. H.T.C. of Flat Wood Roof Decks, with Ceilings

No.	Kind of insulation	Thickness of wood deck			
		1 in.	1½ in.	2 in.	4 in.
1	None	0.32	0.26	0.24	0.18
2	1 in. Thermax	0.19	0.17	0.15	0.13
3	2 in. Thermax	0.12	0.11	0.11	0.09
4	3 in. Thermax	0.10	0.09	0.09	0.08

TABLE XIII. H.T.C. of Flat Steel Roofs

No.	Kind of insulation	Flat steel roof deck
1	None	0.95
2	1 in. Thermax	0.33
3	2 in. Thermax	0.17
4	3 in. Thermax	0.13

TABLE XV. H.T.C. of Residential Ceilings

No.	Attic flooring	Type of plaster base		
		Wood lath	1 in. Thermax	2 in. Thermax
1	None	0.62	0.30	0.16
2	1 in. Wood	0.28	0.20	0.12

TABLE XII. H.T.C. of Flat Concrete Roofs, with Ceilings

No.	Kind of insulation	Thickness of concrete		
		2 in.	4 in.	6 in.
1	None	0.42	0.40	0.37
2	1 in. Thermax	0.23	0.22	0.21
3	2 in. Thermax	0.14	0.13	0.13
4	3 in. Thermax	0.11	0.11	0.10

TABLE XIV. H.T.C. of Flat Steel Roofs, with Ceilings

No.	Kind of insulation	Steel roof deck
1	None	0.46
2	1 in. Thermax	0.23
3	2 in. Thermax	0.14
4	3 in. Thermax	0.11

Note: The various coefficients given in the tables on this and previous page have been determined in accordance with the method employed in the 1935 "Guide" of the American Society of Heating and Ventilating Engineers. The thermal conductivity of Thermax employed throughout the calculation is 0.46 B.t.u.'s per 1 in. thickness, per hour, per sq. ft., per degree F. difference in temperature between the surfaces. (Prof. J. C. Peebles—Armour Institute).

STRENGTH OF THERMAX DECKS

Uniformly Distributed Loads for 2 and 3 inch Thick Slabs

Slab thickness	Span between support c. to c.	Slab area between supports	Ultimate total load	Equivalent uniformly distributed load	Maximum load per sq. ft.	Modulus of rupture lbs. per sq. in.	Average ultimate load center deflection*
3 in.	24 in.	3.33 sq. ft.	575 lbs.	1150 lbs.	345 lbs.	115 lbs.	.327 in.
2 in.	24 in.	3.33 sq. ft.	350 lbs.	700 lbs.	210 lbs.	158 lbs.	.314 in.
2 in.	16 in.	2.22 sq. ft.	850 lbs.	1700 lbs.	765 lbs.	255 lbs.	.236 in.

*Note: Deflections shown are not permanent. Permanent deflections in all cases are within allowable limits.

THERMAX ROOF DECKS—40 LBS. LIVE LOAD

Weight of Purlin and Rafter System for Various Spacings

Trusses c. c.	16' 0"					20' 0"					24' 0"					Size of Thermax tees 2' 0" c. c.
Purlins c. c.	A		B	C	D	A		B	C	D	A		B	C	D	
		Lbs.	Lbs.	Lbs.	Lbs.		Lbs.	Lbs.	Lbs.	Lbs.		Lbs.	Lbs.	Lbs.	Lbs.	
5' 6"	5" I	10.	1.94	1.64	3.58	7" I	15.3	2.98	1.64	4.62	8" I	18.4	3.55	1.64	5.19	4"
6' 0"	6" I	12.5	2.20	1.64	3.84	7" I	15.3	2.73	1.64	4.37	8" I	20.5	3.60	1.64	5.24	4"
6' 6"	6" I	12.5	2.03	2.24	4.27	8" BI	17.5	2.86	2.24	5.10	8" I	20.5	3.32	2.24	5.56	5"
7' 0"	6" I	12.5	1.90	2.24	4.14	8" BI	17.5	2.65	2.24	4.89	9" I	21.8	3.27	2.24	5.51	5"
7' 6"	6" I	14.75	2.09	2.24	4.33	8" BI	17.5	2.47	2.24	4.71	8" CI	24.0	3.34	2.24	5.58	5"
8' 0"	7" I	15.3	2.04	2.24	4.28	8" BI	17.5	2.31	2.24	4.55	8" CI	24.0	3.13	2.24	5.37	5"
8' 6"	7" I	15.3	1.92	2.94	4.86	8" I	18.4	2.28	2.94	5.22	8" CI	24.0	2.94	2.94	5.84	6"
9' 0"	7" I	15.3	1.81	2.94	4.75	9" I	21.8	2.54	2.94	5.48	8" CI	24.0	2.78	2.94	5.72	6"

A—Size of purlin and weight per lineal foot.
B—Purlin weight per square foot of roof.

C—Rafter weight per square foot of roof.
D—Total weight purlin and rafter system per square foot of roof.

THERMAX ROOFING TEES

I—Moment of Inertia. S—Section Modulus

Section	Flange	Depth	Weight per ft.	I	S
6 in.	3.06 in.	5.75 in.	5.87	5.22	1.390
5 in.	2.69 in.	4.75 in.	4.48	3.04	0.917
4 in.	2.28 in.	3.75 in.	3.27	1.25	0.472

THERMAX SIZES AND WEIGHTS

Thickness..... 2 in.—3 in.
Weights (lbs. per sq. ft.)..... 4.4 —6.6
Lengths..... 64 in. (longer up to 9 ft. on special order)
Width..... All sizes 20 in. wide

THERMAX AS SHEATHING AND ROOF DECKING

Specifications

Use on Walls Under Wood Siding, Shingles, Stucco or Masonry Veneer
Use on Sloping Roofs Under Shingles, Slate, Tile or Similiar Rigid Roof Units
Which May Be Laid Over Wood Furring Strips

Note: For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For details, see page 10.

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.

(1) WORK INCLUDED

Note: Here list and locate definitely the wall and roof areas to be covered. If both 1 in. and 2 in. thicknesses are used, list separately and the respective locations or areas covered.

(2) MATERIAL

(Sheathing) (and) (roof decking) shall be Thermax Insulating Board as made by Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa. Boards shall be full **(1 in.) (and) (2 in.)** thick **(as above designated)**, 20 in. wide by 64 in. long.

(3) APPLICATION

(3a) GENERAL—Continuity of insulation is imperative. Apply Thermax boards with the length at right angles to the framing members. End joints (except at corners, openings, etc.) shall center over framing members. Break end joints in alternate courses.

(3b) SPACING—Thermax boards shall be brought to moderate contact at all joints and intersections and with window and door frames and trim **(and with gables and parapet walls)**. Do not force Thermax into place.

(3c) NAILS—

(3c1) Use 8d common **(cement coated)** nails with 1 in. galvanized roofing washers or 8d large headed foundry nails for 1 in. Thermax.

(3c2) Use 16d common **(cement coated)** nails with 1 in. galvanized roofing washers or 16d large headed foundry nails for 2 in. Thermax.

(3d) NAILING—First nail Thermax to intermediate framing

members and then nail the ends on all framing members spaced three (3) nails, approximately 9 in. apart. On ends four (4) nails shall be used nailed approximately $\frac{5}{8}$ in. from the edge.

(4) SUPPLEMENTARY PROVISIONS

Note: Provide for the following in other specification divisions.

(4a) CONSTRUCTION—Framing shall be in accordance with the recommendations of the U. S. Department of Commerce and the National Lumber Manufacturers' Association.

(4b) WATERPROOF PAPER—Cover all exterior Thermax surfaces **(except those under stucco)** with **(specify brand)** waterproof building paper. Lap at least 2 in. at all joints and secure, through the insulation to framing members with nails driven through galvanized washers.

(4c) FURRING STRIPS—

(4c1) Provide 1x3 in. furring strips properly spaced over Thermax to take **(wood siding) (shingles) (slate) (tile) (specify) (wall) (and) (roof)** covering. Strips shall be laid **(directly over and parallel with the framing members for wood siding) (and) (at right angles to the framing members for shingles, etc.)** and nailed to each bearing.

(4c2) Furring nails shall be sufficiently long to pass through the furring and Thermax to penetrate the framing members at least 1 in.

(4d) WOOD SIDING—All joints shall butt over the center of a furring strip.

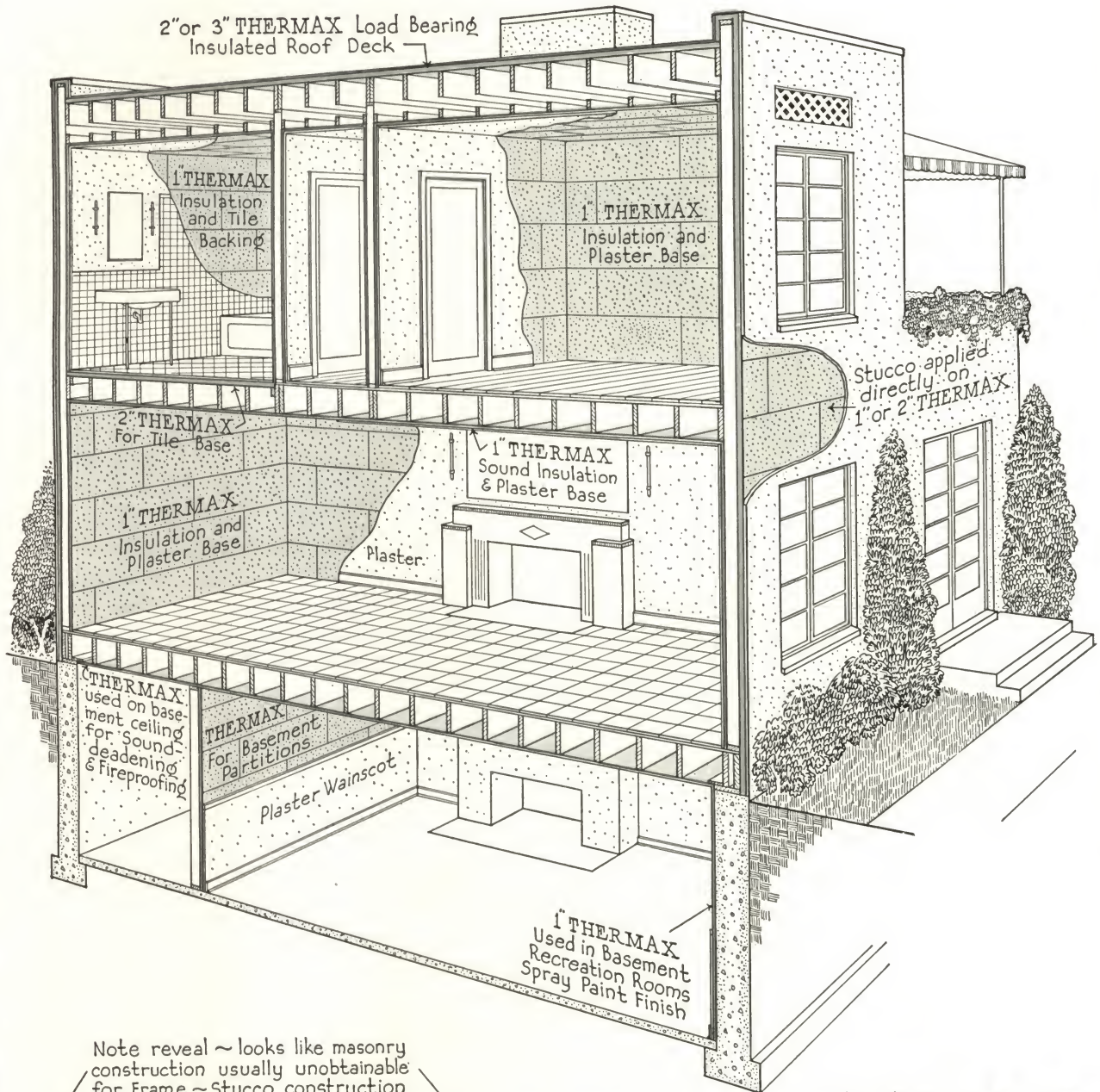
(4e) MASONRY VENEER TIES—Provide **(specify type)** galvanized masonry ties at each stud spaced approximately 16 in. apart vertically. Nails shall be sufficiently long to pass through the Thermax and penetrate the stud at least 1 in.

(4f) EXTERIOR STUCCO—Apply the exterior stucco approximately 1 in. thick directly to the Thermax in accordance with the manufacturer's standard specification for application over masonry base. Do not wet the Thermax surface before applying the stucco.

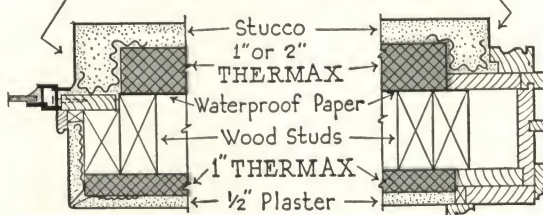


UNITED ASSOCIATES HOMES, INC., MINEOLA, L. I.
Architect—William P. LaVallee
Thermax Insulation for Sheathing, Stucco and Plaster Base

THERMAX IN RESIDENTIAL CONSTRUCTION

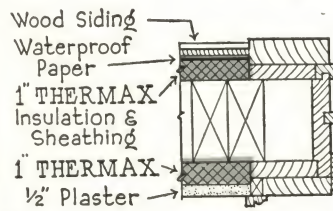


Note reveal ~ looks like masonry construction usually unobtainable for Frame ~ Stucco construction

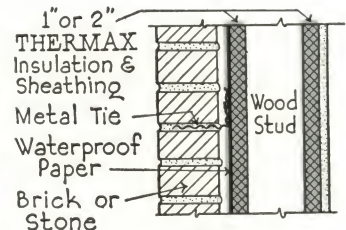


Metal Window in Stucco on Frame Building ~ ~ ~

Standard Window Frame & Brick Mold For Stucco on Frame Buildings ~



Standard Window Frame For Frame Buildings ~ ~ ~



Masonry Veneer Construction

THERMAX AS INTERIOR PLASTER BASE

Specifications

Use as an Insulating Plaster Base

Note: For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For details, see pages 10 and 12.

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.

(1) WORK INCLUDED

Note: Here list and locate definitely the wall and ceiling areas to be covered. If both 1 in. and 2 in. thicknesses are used, list separately and the respective locations or areas covered.

(2) MATERIAL

Plaster base shall be Thermax Insulating Board as made by Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa. Units shall be full (1 in.) (and) (2 in.) thick (as above designated), 20 in. wide by 64 in. long.

(3) APPLICATION ON FRAME CONSTRUCTION

(3a) **GENERAL**—Apply Thermax boards with length at right angles to the framing members. End joints shall center over framing members. Stagger end joints in successive courses on all walls and ceilings; likewise stagger end joints at juncture of walls and ceilings.

(3b) **SPACING**—Thermax Board Units shall be brought to moderate contact at all joints and with window and door frames. Do not force Thermax into place.

(3c) **NAILS**—

(3c1) Use 8d common (cement coated) nails with 1 in. galvanized roofing washers or 8d large headed foundry nails for 1 in. Thermax units.

(3c2) Use 16d common (cement coated) nails with 1 in. galvanized roofing washers or 16d large headed foundry nails for 2 in. Thermax units.

(3d) **NAILING**—Space three (3) nails approximately 9 in. apart on centers on each bearing and four (4) nails approximately 5/8 in. from the edges at ends. First nail to intermediate framing members and then at ends.

(4) APPLICATION ON MASONRY WALLS

(4a) **GENERAL**—Nail Thermax to wood furring strips (spaced 16 in. o.c. for 1 in. Thermax—32 in. o.c. for 2 in.) or apply Thermax Boards to the masonry with (Emulsified Asphalt) (1/2 in. thick backing of waterproofing Portland cement mortar). Stagger end joints in successive courses.

Note: Emulsified Asphalt is advocated since this not only thoroughly bonds the Thermax to the masonry, but also seals the masonry against air infiltration or moisture due to capillarity.

(4b) **BACKING**—

Note: Select either (4b1) or (4b2) backing as best adapted.

(4b1) **Asphalt**—Apply a heavy coat of high grade emulsified asphalt in which clay is used as the emulsifying agent and containing not less than 60% of asphalt (specify) approximately 1/8 in. thick (sprayed) (troweled) onto the thoroughly cleaned masonry wall.

(4b2) **Cement Mortar**—Apply a 1/2 in. thick backing of fresh Portland cement mortar (1 to 2 mix) to the thoroughly cleaned masonry wall.

(4c) **ERECTING THERMAX**—Apply the Thermax Boards against the backing while plastic with sufficient pressure to assure a thorough bond. Units shall be set in moderate contact, with exposed faces in a true vertical plane. Do not force Thermax into place. Cut and fit Thermax tight against all wood grounds attached to masonry (see 5b2).

(5) SUPPLEMENTARY PROVISIONS

Note: Provide for the following in other specification divisions.

(5a) **CONSTRUCTION**—Framing shall be in accordance with the recommendations of the U. S. Department of Commerce and the National Lumber Manufacturers' Association.

(5b) **GROUND**—

(5b1) **For Frame Construction**—Furnish and erect, substantially secured to framing members through the Thermax, 1/2 in. grounds to receive all woodwork trim.

(5b2) **For Un-Furred Masonry Construction**—Furnish and erect, substantially secured to the masonry, grounds the thickness of the insulation to which, after the insulation has been erected, shall be secured 1/2 in. grounds to receive all woodwork trim.

(5b3) **For Furred Masonry Construction**—Furnish and erect, substantially secured to furring strips through the Thermax, 1/2 in. grounds to receive all woodwork trim.

(5c) **PLASTERING**—

(5c1) **Caution**—Do not wet Thermax before applying plaster.

(5c2) **Plaster**—Use gypsum cement, gypsum wood fiber or lime plasters for scratch and brown coat.

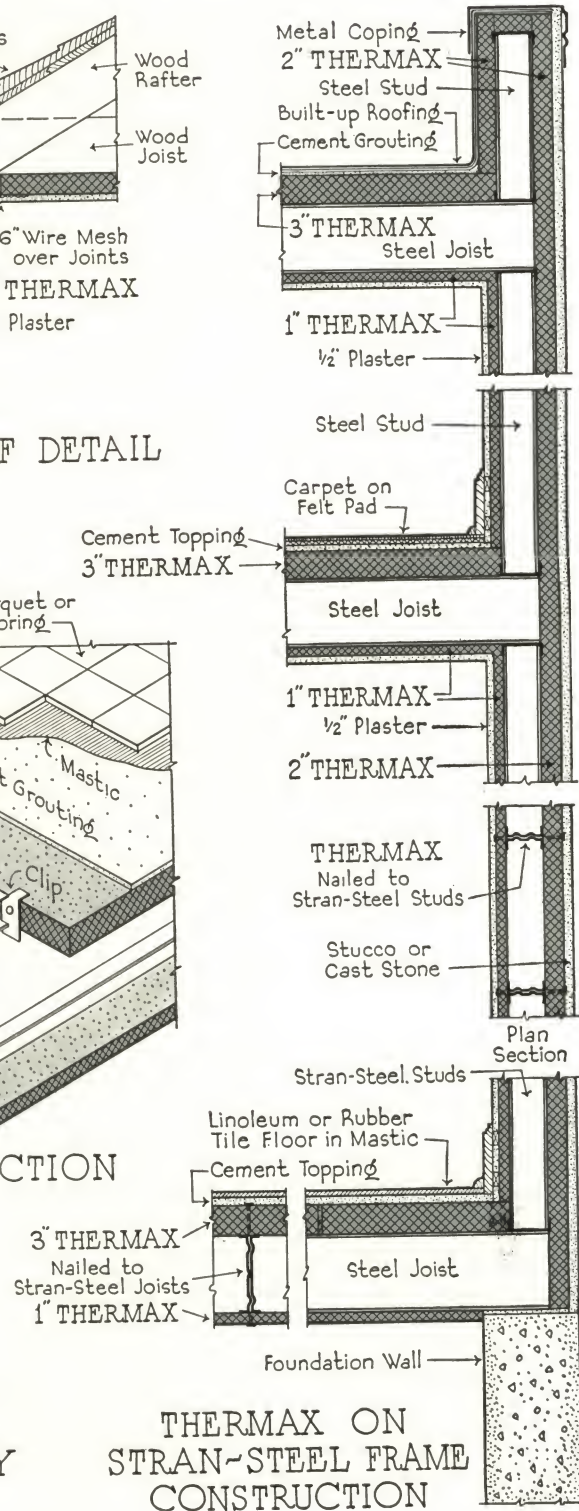
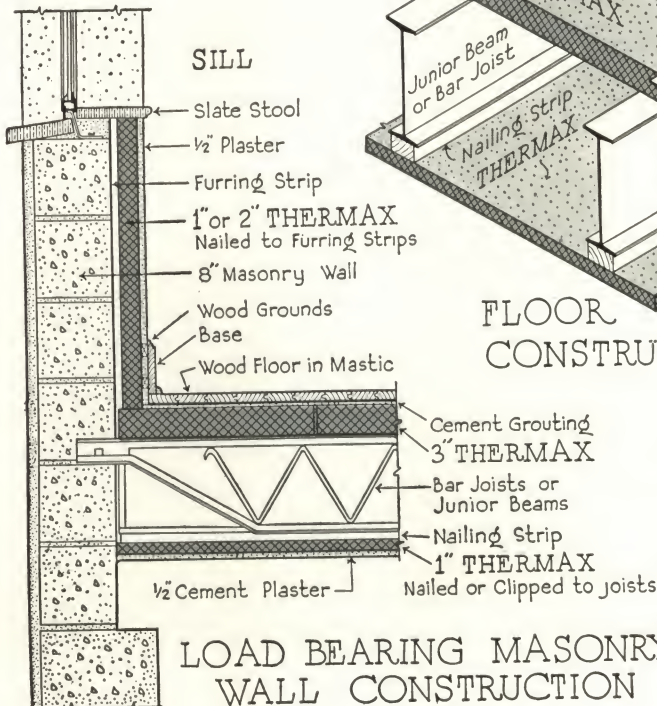
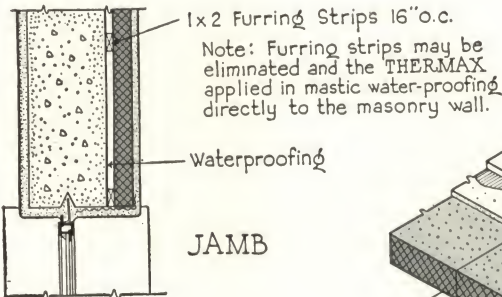
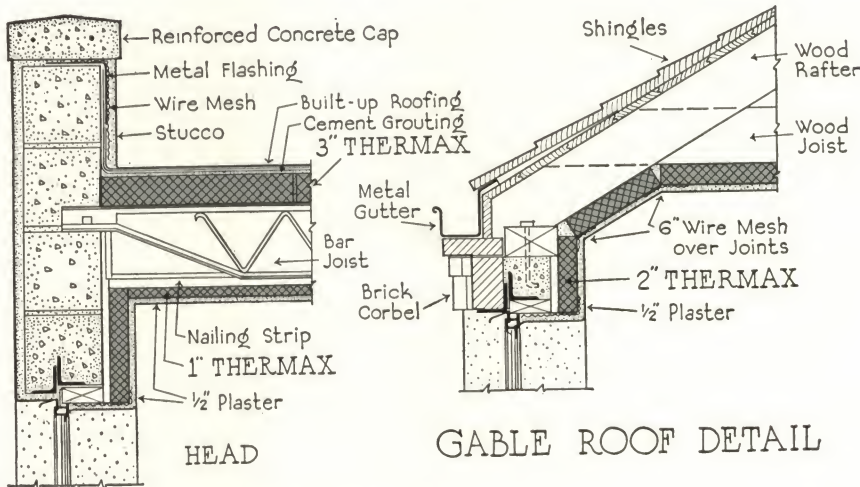
(5c3) **Thickness**—Full 1/2 in. thick.

(5c4) **Application**—Apply plaster in three (3) coats (scratch, brown and finish) in accordance with the plaster manufacturer's specifications. Surfaces shall be rod to a true plane. All corners and angles shall be plumb and true. Wherever necessary and particularly on ceilings, provide plaster screeds to insure a uniform full plaster thickness.

(5c5) **Ventilation**—Provide adequate ventilation for the proper drying and curing of the plaster work.

THERMAX HOUSING DEVELOPMENT DETAILS

Fire—Safe—Insulated—Vermin-Proof



THERMAX INSULATING STRUCTURAL ROOF SLABS

Specifications

Use on Flat or Pitched Roofs as a Structural Insulating Precast Slab Applied Over Structural Steel or Wood Roof Framing

Note: For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For details, see page 14.

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.

(1) WORK INCLUDED

Note: Here list and locate definitely the roof areas to be constructed of Thermax Slabs. If both 2 in. and 3 in. thicknesses are used, list separately and the respective location or areas.

(2) MATERIAL

(2a) **ROOF SLABS**—Roof slabs shall be Thermax Insulative Structural Roof Slabs as made by Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa. Slabs shall be full (2 in.) (and) (3 in.) thick (**as above designated**), 20 in. wide by (64 in.) (72 in.) (96 in.) long.

(2b) **CLIPS**—Clips for attaching Thermax Slabs to the structural steel supporting Ts shall be Thermax Galvanized Roofing Clips.

(3) LAYING ROOF SLABS

Thermax Roof Slabs shall be laid at right angles to the steel framing Ts and fastened with Thermax Clips at each T. Clips shall be secured in place with galvanized nails driven into the Thermax. Ends of units shall rest on steel rafters with the joint between adjacent slabs centered over the T. Sufficient clips shall be applied at eaves and ridges to form soldering grounds for sheet metal work.



PHENIX BOX AND LABEL COMPANY, KANSAS CITY, MO.
Applying Built-up Roofing over Thermax Insulated Roof Deck

Thermax slabs shall be brought to moderate contact. Do not force Thermax into place. Break end joints in alternate rows. Grout all joints with Portland cement mortar (1:3 mix) and brush or screed a skim coat of thick consistency over the entire surface before applying built-up roofing. **Protect Thermax Roof Slabs from rain and snow until waterproof roofing is applied.**

(4) FINISHED ROOFING

Finished roofing shall be applied over the Thermax Roof Slabs in accordance with the roofing manufacturer's specifications.

Note: A standard built-up 4 or 5-ply roof is recommended.

(5) SUPPLEMENTARY PROVISIONS

Note: Provide for the following in other specification divisions.

(5a) **STEEL ROOF CONSTRUCTION**—Design and strength of framing to support Thermax Roof Slabs shall be in accordance with the engineering data pertaining to span and thickness of slab units furnished by the Thermax Division, Northwest Magnesite Co. to sustain the specified live and dead loads.

The steel, its fabrication and its protection shall be in accordance with the Standard Specifications of the American Institute of Steel Construction.

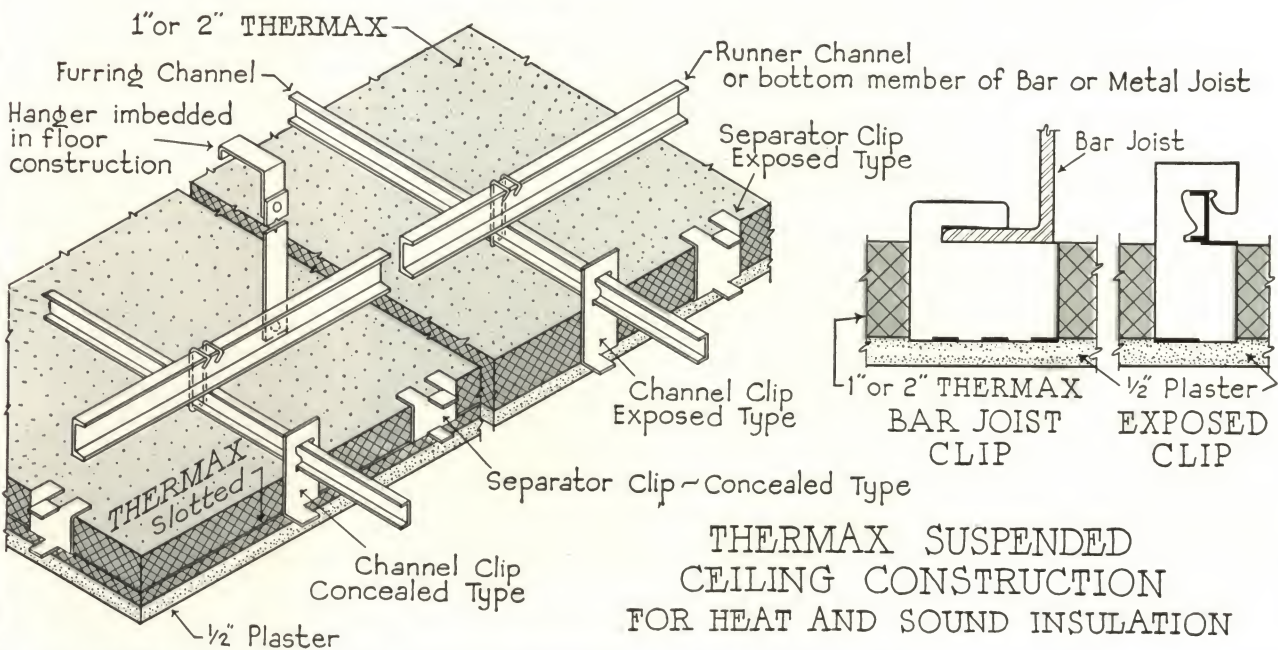
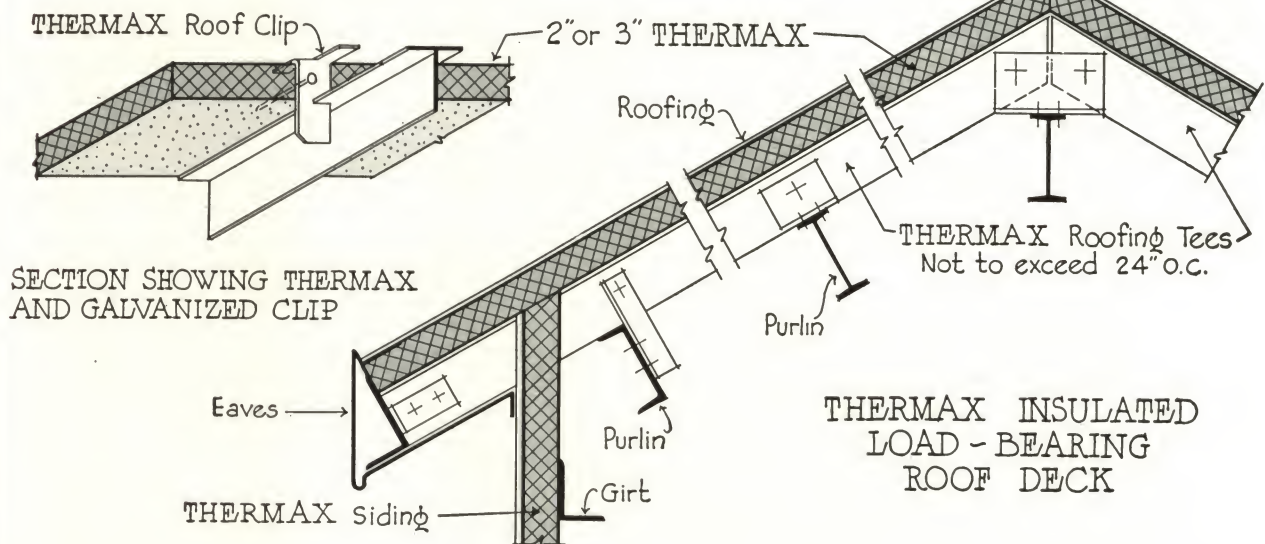
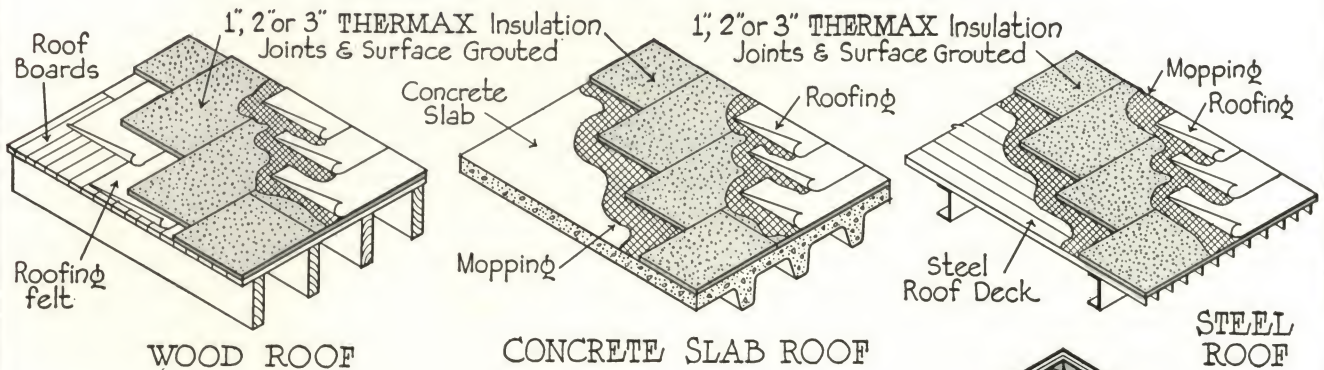
(5b) **PAINTING**—The exposed underside of the Thermax Roof Slabs shall be (**spray**) (**brush**) painted with (**specify brand**) (**aluminum paint**) (**light reflecting cold water or oil paint**) (**specify**).

(5c) **PLASTERING**—The exposed underside of the Thermax Roof Slabs shall be plastered with a thin coat of (**gypsum or lime plaster**) (**white Portland cement tempered with hydrated lime**) (**specify**).



FIFTH REGIMENT ARMORY, BALTIMORE, MD.
Thermax Laid in Tees Used as Roof Deck and Acoustical Treatment

THERMAX INSULATED ROOFS AND CEILINGS



THERMAX INSULATING STRUCTURAL FLOOR AND CEILING SLABS

Specifications

Use for Fireproof Construction in Conjunction with Bar Joists, Metal Joists and Junior Beam Constructions

Note: For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For Engineering Data, see page 8. For details, see page 14.

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.

(1) WORK INCLUDED

Note: Here list and locate definitely the floor and ceiling areas to be covered. If more than one thickness is used, list separately and the respective locations or areas covered.

(2) CONSTRUCTION

The (floors) (and) (ceilings) are constructed (by others) (specify) of (specify type of joist) spaced (specify) as noted on plans.

Note: Maximum joist spacing, 24 in. o. c.

(3) MATERIALS

(3a) SLAB MATERIAL—

(Floor) (and) (ceiling) slabs shall be Thermax as made by Thermax Division, Northwest Magnesite Co., Pittsburgh, Pa.

(3b) FLOOR SLABS—Floor slabs shall be 3 in. thick x 20 in. wide x 48, 64 or 72 in. long.

(3c) CEILING SLABS—Ceiling slabs shall be (1 in.) (2 in.) thick x 20 in. wide x 48 or 64 in. long.

Note: Select thickness with regard to fireproofing required by local ordinances.

(3d) FLOOR SLAB ATTACHMENT—Special Thermax galvanized clips adapted to fit the top flange of the steel construction or nail Thermax directly to Nailers Joists.

(3e) CEILING SLAB ATTACHMENT—Special Thermax galvanized clips or nail Thermax directly to Nailers Joists.

(4) LAYING THE FLOOR SLABS

Thermax Floor Slabs shall be laid at right angles to the joists and fastened by Thermax Clips. Clips shall be secured in place with galvanized nails driven into the Thermax. Ends of units shall rest on joists with the joint between adjacent slabs centered over the flange. Thermax slabs shall be brought to moderate contact. Do not force Thermax into place. Break end joints in alternate rows. Grout all joints with Portland cement mortar (1:3 mix) or nail Thermax directly to Nailers Joists.

Note: Specify elsewhere the finish to be applied over the structural slabs. Use cement mortar (1:3 mix) for cement finish. Terrazzo finish 1½ in. thick may be applied directly over the slab.

(5) ERECTING SLABS, SUSPENDED CEILING CONSTRUCTION

(5a) RUNNER CHANNELS—(Specify Construction, Spacing and Suspension).

(5b) CROSS-FURRING—Apply cross-furring at right angles to the (runner channels) (joists), 16 in. o. c. substantially secured to the flange.

(5c) Ceiling slabs shall be erected at right angles to the cross-furring. Thermax slabs shall be brought to moderate contact. Do not force Thermax into place. Break end joints in alternate rows centering these over the center of the cross-furring member.

Slabs shall be secured to the cross-furring in accordance with the Standard Thermax Suspended Ceiling Detail with (concealed) (exposed) channel clips hung over each cross-furring member. Midway between each channel clip on the long edges of the slabs install a (concealed) (exposed) separator clip. Install (2) (concealed) (exposed) separator clips at all slab end butt joints.

Note: Slabs may be plastered with gypsum or lime plaster in accordance with the plaster manufacturer's standard specifications. Slabs may be left exposed for acoustical correction. See pages 25 and 26 for Absorbex Acoustical Corrective.



AUDITORIUM ROOF CONSTRUCTION
Thermax Laid in Ts Used as Deck and Acoustical Treatment

THERMAX INSULATION OVER ROOF DECKS

Specifications

Use Over Wood, Concrete and Steel and Similar Roof Decks

Note: For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For details, see page 14.

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.

(1) WORK INCLUDED

Note: Here list and locate definitely the roof areas to be covered. If more than one thickness is used, list separately and the respective locations or areas covered.

(2) MATERIAL

Roof insulation shall be Thermax as made by Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa. Insulation shall be **(1 in.) (2 in.) (3 in.)** thick boards, 20 in. wide x 48 or 64 in. long.

(3) APPLICATION—GENERAL

(3a) CONDITION OF DECK—Deck shall be smooth, dry and swept clean.

(3b) GENERAL—Thermax shall be dry when applied. Lay only as much insulation as can be covered and protected by the finished roof covering in a single day. Where work is stopped, protect the edges of insulation with overlapping mopped strips of roofing felt, leaving the felt strips as a permanent seal. Apply Thermax units with edges in moderate contact. Cut units to fit snugly against all parapets or similar vertical surfaces. Do not force Thermax into place. Break joints between alternate rows.

Seal off at least each 30x30 ft. area (900 sq. ft.) with overlapping mopped strips of roofing felt on all edges.

Grout all joints with Portland cement mortar (1:3 mix) and brush a skim coat of thick consistency over the entire surface before applying built-up roofing.

(3c) APPLICATION OVER WOOD DECKS—

(3c1) Felt—Apply **(one) (two)** layer (s) of dry, saturated roofing felt over the roof boards. Lap the felt at least 1½ in. at joints. **(Felt shall extend 6 in. up on walls and all vertical surfaces and shall finally be turned over and mopped to top of insulation.)**

Note: Felt protects against dripping of pitch or asphalt through deck. Include last bracketed italicized clause only where there is excessive humidity inside the structure. Depending on humidity conditions use one or two layers.

(3c2) Laying—Apply the Thermax units over the felt in a single layer of the thickness specified.

(3c3) Nailing—Insulation shall be secured to deck with common (cement coated) nails with 1 in. galvanized roofing washers or large headed foundry nails sufficiently long to penetrate through the insulation and provide firm hold in deck. Space nails approximately 12 in. on centers and not more than 2 in. from edges of the unit. Carry one row of nails longitudinally through the center of each unit.

(3d) APPLICATION OVER CONCRETE DECKS—

(3d1) Felt—Apply **(one) (two)** layer (s) of saturated roofing felt over the roof deck, thoroughly stuck in hot **(pitch) (asphalt)**. Felt shall extend 6 in. up on walls and all vertical surfaces and shall finally be turned over and mopped to top of insulation.

Note: Include clause (3d1) where interior of structure is subject to high humidity conditions as in paper, textile mills, etc., or on applications made during winter months where decks do not have opportunity to thoroughly cure and dry out before insulation is applied.

(3d2) Laying—Mop deck thoroughly with **(hot pitch) (hot asphalt)** using not less than 35 lbs. per square. Apply the Thermax units while the mopping is still hot. Firmly bed a single layer of Thermax, of the thickness specified, in the binder over the entire surface.

(3e) APPLICATION OVER STEEL DECKS—

(3e1) Laying—Mop deck thoroughly with hot asphalt using not less than 35 lbs. per square.

Note: Pitch should not be used over steel decks.

Apply the Thermax units while the mopping is still hot. Firmly bed a single layer of Thermax, of the thickness specified, in the binder over the entire surface.

(4) FINISHED ROOFING

Finished roofing shall be applied over insulation in accordance with the roofing manufacturer's specification.



FOX THEATRE, SPOKANE, WASH.
Architects—Whitehouse and Price
Thermax Roof Insulation over Concrete Deck

THERMAX PARTITION AND FURRING BLOCKS

Specifications

Use for Fireproof Construction Including Column Covering

Note: For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For details, see page 18.

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.

(1) WORK INCLUDED

All partitions **(and)** **(all furring for exterior masonry walls)** **(and)** **(all column covering)** shall be built of Thermax.

Note: If there are any exceptions, so note. List and locate any special requirements if not clearly indicated on plans and details.

Note: Thermax partitions, etc., requiring no plaster may be finished with plastic or other high grade paint. Thermax has excellent acoustical absorption qualities and is pleasing in appearance when the blocks are symmetrically disposed and carefully laid. The surface is not fragile. If required, list separately here.

(2) PRELIMINARY PROVISIONS

(2a) All rough bucks for openings will be provided and accurately set by others.

(2b) All wood nailing blocks to receive grounds, etc., will be provided and attached to Thermax blocks by others.

(3) MATERIALS

(3a) **GENERAL**—All Thermax Blocks shall be as manufactured by the Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa.

(3b) **PARTITION BLOCKS**—Thermax, 2 or 3 in. thicknesses, as indicated on plans, 20 in. wide x 32, 48 or 64 in. long.

Note: Use 2 or 3 in. for partitions up to 10 ft. in height. Use 3 in. Thermax for partitions over 10 ft. in height.

(3c) **FURRING BLOCK**—Thermax (2 in.) (3 in.) thick, 20 in. wide x 32, 48 or 64 in. long.

(3d) **COLUMN COVERING**—Thermax (2 in.) (3 in.) thick, 20 in. wide x 32, 48 or 64 in. long.

(3e) **MORTAR**—Portland cement, gypsum or lime mortar fulfilling requirements of the standard A. S. T. M. Specifications. Sand shall be clean and free from organic matter with grains graded from fine to coarse. Mortar shall be mixed in the proportion of one (1) part of cement to three (3) parts of sand.

(3f) **EMULSIFIED ASPHALT**—Emulsified asphalt for setting exterior masonry wall furring shall be of high grade in which clay is used as the emulsifying agent and containing not less than 60% of asphalt **(specify)**.

(4) ERECTION

(4a) **GENERAL**—All blocks **(except furring set with asphalt)** shall be laid in Portland cement, gypsum or lime mortar with full, flush joints to a line, with horizontal beds uniformly

level on each course. All joints, chinks and crevices between the tile and other work shall be filled with mortar well slushed in. Joints in alternate courses shall be broken.

All blocks shall be started on the fireproof floor, set plumb straight and true, and wedged at ceiling and slushed with mortar. Tile at corners and re-entrant angles shall be laid interlocked in alternate courses. Cut blocks into 16 in. lengths where end nailing blocks for grounds are necessary.

All joints of unplastered blocks shall be neatly pointed smooth as the work progresses.

(4b) **PARTITIONS**—All partitions coming in contact with existing walls shall be rigidly anchored **(by driving 10d spikes into the mortar joints of the wall at the joints of each partition tile course)** **(by building in at each partition tile course metal ties provided and built into the masonry by others)** **(specify)**.

(4c) **FURRING**—Furring shall be laid **(against)** **(or)** **(free from)** the walls as shown on the plans and details.

(4c1) Apply a heavy coat of emulsified asphalt approximately 1/8 in. thick **(sprayed)** **(troweled)** on to the thoroughly cleaned masonry wall. Apply the Thermax blocks while asphalt is plastic **(without mortar joints)** against this backing with sufficient pressure to assure a thorough bond. Units shall be set in moderate contact with exposed faces in a true vertical plane. Do not force Thermax into place.

Note: This method is advocated since it not only firmly bonds the Thermax to the masonry, but also seals the masonry against air infiltration or moisture due to capillarity.

(4c2) Rigidly anchor the free standing furring tile to the masonry wall approximately every square yard of face area **(by 10d spikes driven into the mortar joints of the wall at the course joints of the furring tile)** **(by building in at the furring tile course metal ties provided and built into the masonry by others)** **(specify)**.

Note: Use for free standing furring. Dampproofing of wall back of furring is advocated.

Note: See also par. 4, page 11, under "Thermax as Interior Plaster Base."

(4d) **COLUMN COVERING**—A single thickness of block shall be laid against the outside edges of the steel **(and the space between the tile and steel shall be solidly backfilled with pieces of Thermax blocks and mortar)**.

Note: Include or omit clause covering backfilling as required by local ordinance.

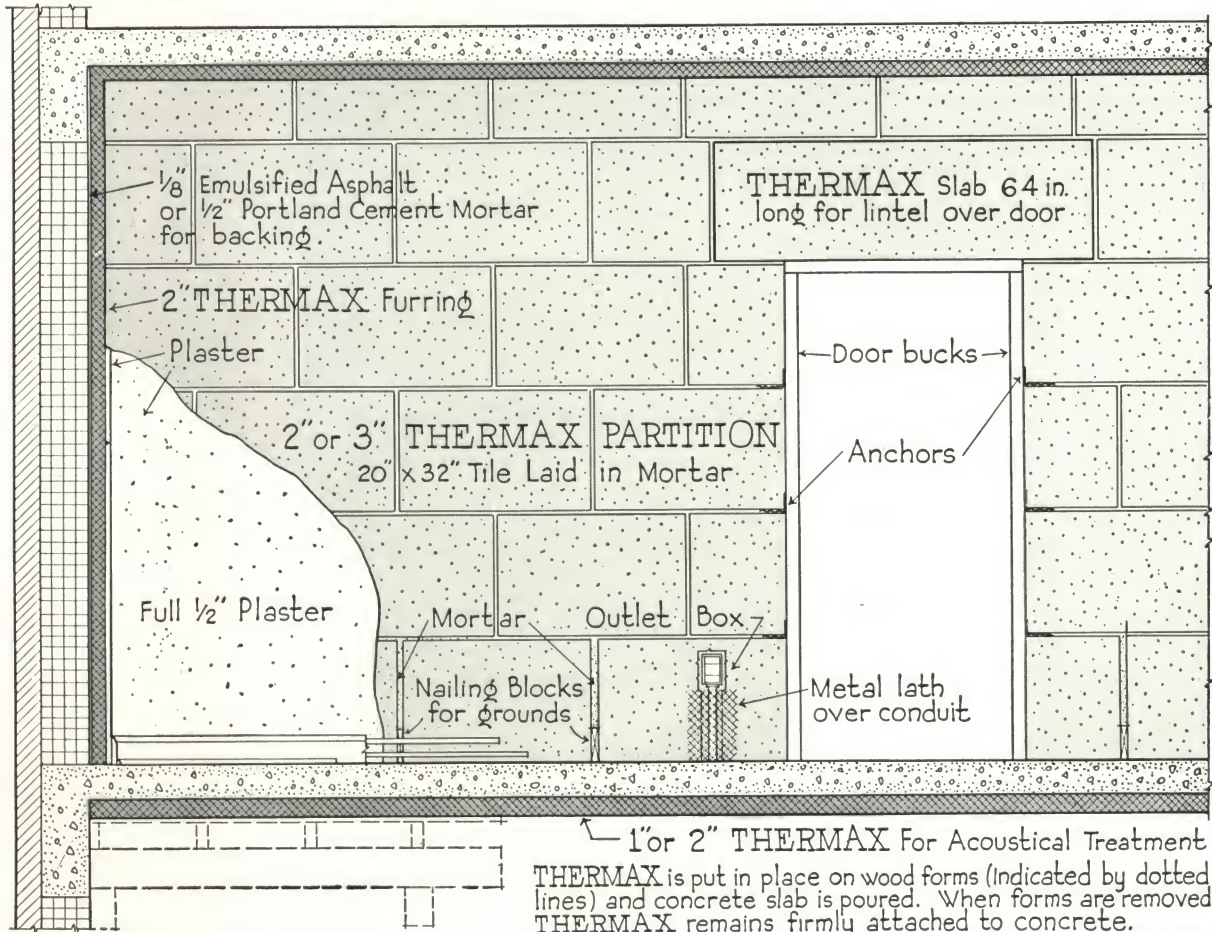
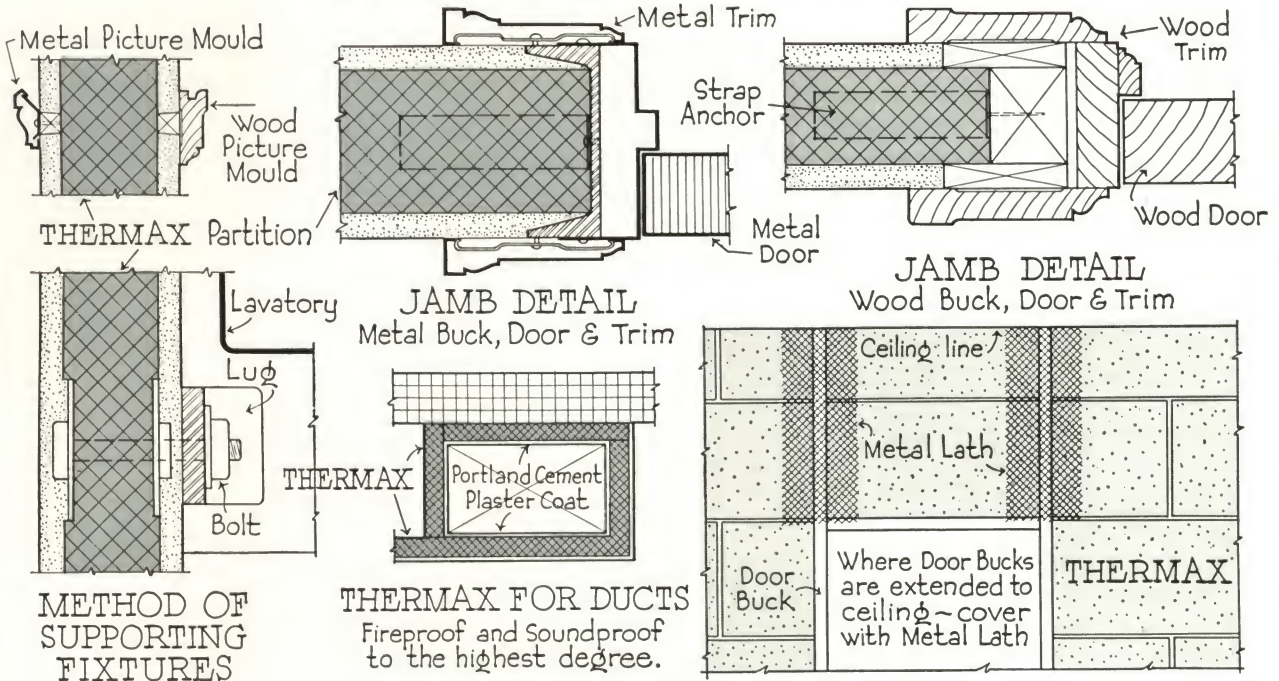
(4e) **BUCK ANCHORS**—Anchor all wood bucks to block by 10d cut nails driven into the buck at each block course or with other approved metal anchor.

(4f) **LINTELS**—Lintels shall have at least 4 in. bearing at each end on the block beneath. Lintels over openings more than 4 ft. 8 in. wide shall be provided with steel lintel furnished by others.

Cover all end joints of lintels with expanded metal lath strips 8 in. wide, tacked to blocks with large head nails or staples.

THERMAX PARTITION AND FURRING BLOCKS

Fireproof—Light Weight—Sound Insulating



THERMAX HOLLOW PARTITION CONSTRUCTION

Specifications

Use for Fireproof Construction

Note: For Heat Transmission Coefficients as applied to various constructions, see pages 7 and 8. For details, see page 20.

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.

(1) WORK INCLUDED

All partitions so indicated on the plans and details shall be built of Thermax Hollow Construction.

Note: If there are any exceptions, so note. List and locate any special requirements if not clearly indicated on plans and details.

(2) PRELIMINARY AND SUPPLEMENTARY PROVISIONS

(2a) All rough bucks for openings will be provided and accurately set by others.

(2b) All wood nailing strips will be provided and accurately set by others. They shall be sized to the clear interior space detailed and rigidly secured to the floors, ceilings, and walls in a manner best adapted to the particular construction.

Note: On wood construction strips may be nailed to the rough flooring or framing member—cement coated nails preferred. On concrete construction sleeper clips cast in the concrete are preferable to cement nails. Rawl plugs are excellent for attaching strips to masonry walls. See also Note under (3b).

(2c) Plaster grounds for full $\frac{1}{2}$ in. plaster shall be provided and attached by others. Grounds shall be nailed to Thermax with nails driven at an angle.

Note: For plastering, see (5c) page 11, under heading "Thermax As Interior Plaster Base."

(3) MATERIALS

(3a) **THERMAX**—1 in. thick, 20 in. wide x 64 in. Thermax as manufactured by the

Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa.

(3b) **SPREADER CLIPS**—Spreader clips shall be made of not less than 16 gauge (**galvanized**) (**specify rustproofing**) steel $\frac{3}{4}$ in. wide formed as detailed to support and seat the Thermax slabs and separate them to the required distance. Halves of clips shall be accurately spot welded together.

Note: Where desired half clips may be spot welded to cold rolled channels and these secured to floors, walls, door bucks, and ceilings in lieu of wood nailing strips. Clips shall be accurately spaced to rigidly support the Thermax slabs in the same general manner as detailed. If required, so specify and detail.

(3c) **MORTAR**—Portland cement mortar (gauged with hydrated lime) fulfilling requirements of the standard A. S. T. M. Specifications. Sand shall be clean and sharp, free from organic

matter with grains graded from fine to coarse. Mortar shall be mixed in the proportion of one (1) part of lime putty to three (3) parts of sand.

(4) ERECTION

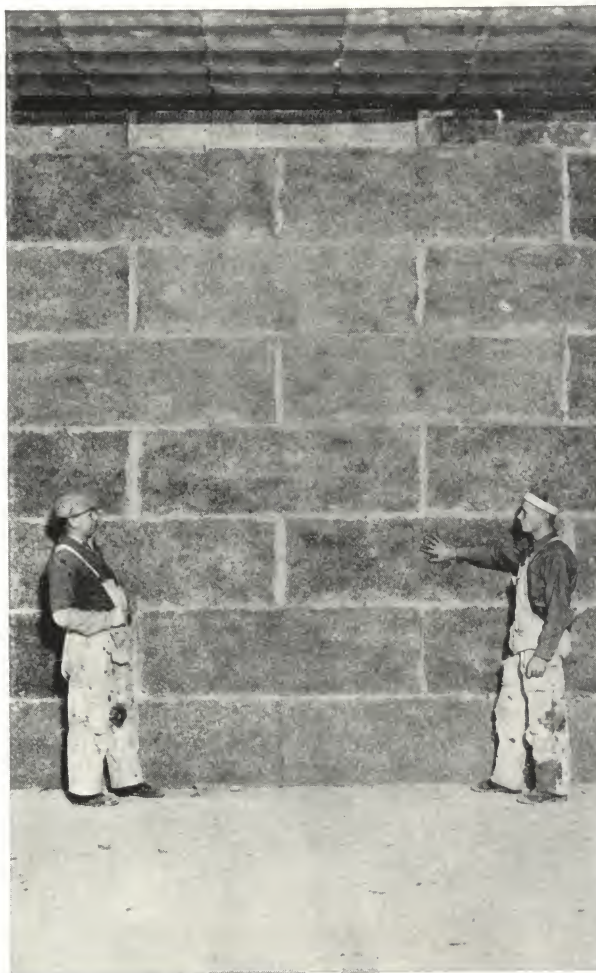
(4a) All blocks shall be laid in cement mortar (gauged with lime) with full, flush joints with horizontal beds uniformly level on each course. All joints, chinks, and crevices between the slabs and other work shall be filled with mortar well slushed in. Joints in alternate courses shall be broken.

(4b) All slabs in alternate courses shall break vertical joints with those below.

(4c) Starting at the floor, bed the first course of slabs in mortar and nail them to nailing strips at floors, walls, and opening bucks. Nails shall be 8d common (**cement coated**) nails with 1 in. galvanized roofing washers or 8d large headed foundry nails. Place the spreader clips at top, four (4) to the slab, one at each end close to the end joint and two at the center so spaced as to secure the ends of the next laid course.

(4d) Subsequent courses shall be laid in similar manner.

(4e) Accurately fit Thermax Slabs at ceilings, openings, etc. and around conduits, outlet boxes, etc. Nail top of ceiling slabs to ceiling nailing strip.

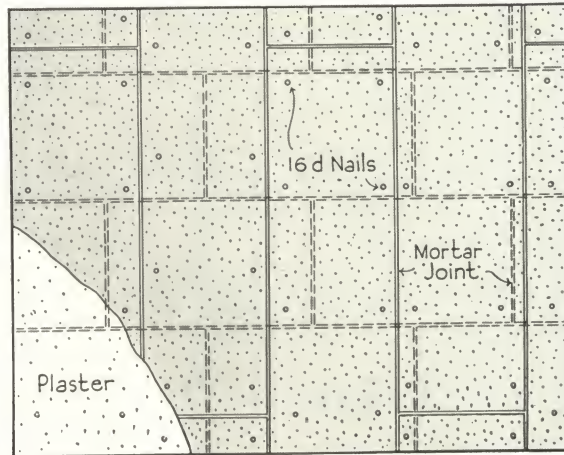
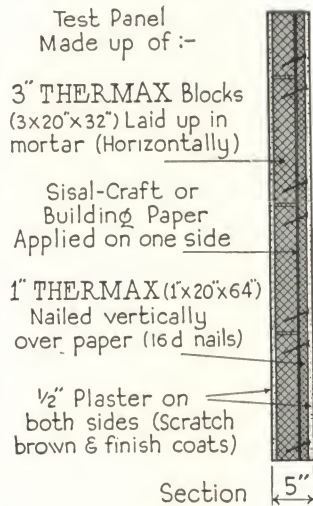


NINTH STREET SCHOOL, LOS ANGELES
Thermax Fireproof Partitions—12' 6" High

THERMAX SOUND PROOF PARTITIONS

5" OVERALL THICKNESS

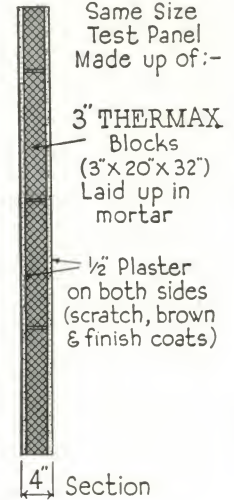
Sound Transmission Test, Bureau of Standards, July 19, 1934
SOUND TRANSMISSION LOSS IN DECIBELS 47.4



Elevation

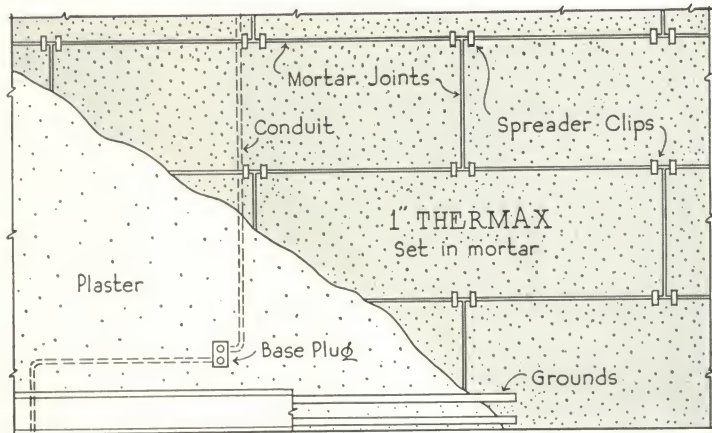
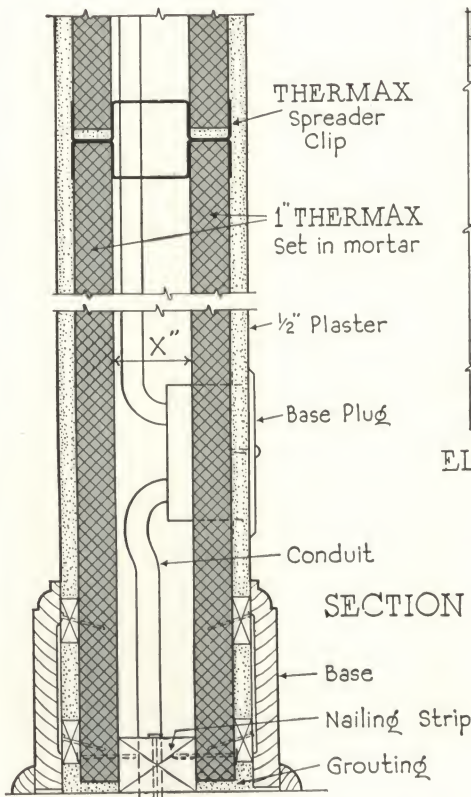
4" OVERALL THICKNESS

Bureau of Standards Test, June 7, 1934
LOSS IN DECIBELS 35.0



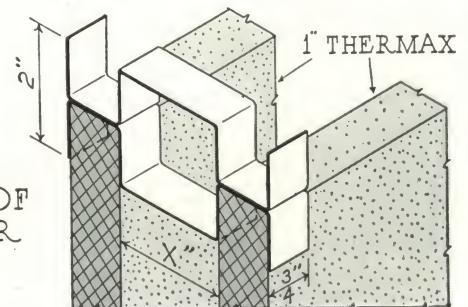
THERMAX HOLLOW PARTITION CONSTRUCTION

Earthquake Proof



ELEVATION OF PARTITION SHOWING LOCATION OF CLIPS

DETAIL OF SPREADER CLIP



2 INCH THICK STEEL STUD AND THERMAX PARTITION

Specifications

Use for Fireproof Construction

Note: For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For details, see page 22.

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those causes which apply to the particular work. Words or clauses within brackets in bold faced type are selective.

(1) WORK INCLUDED

All partitions (**so indicated**) shall be 2 in. thick (finish) metal stud and Thermax construction.

(2) PRELIMINARY PROVISIONS

All rough bucks for openings and 1/2 in. thick plaster grounds will be provided and set by others.

(3) MATERIALS

(3a) **THERMAX**—1 in. thick, 20 in. wide x 64 in. Thermax as manufactured by the Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa.

(3b) **STEEL STUDS**—Standard 1 in. steel channels, preferably hot rolled, weighing not less than 700 lbs. per M lin. ft.

(3c) **CLIPS**—Clips for attaching Thermax to steel studs shall be Thermax Clips of 14 ga. spring steel wire.

(4) ERECTION

(4a) Drill holes aligned in a vertical plane in floor and ceiling at least 3/4 in. deep, 20 1/2 in. o. c. Cut studs slightly long and spring into the holes.

(4b) Securely anchor a 1 in. channel runner at floor and ceiling with lag screws or toggle bolts. Align channel runners in a vertical plane. Bend 4 in. shoe on top and bottom of each vertical stud. Erect studs 20 1/2 in. o. c. and securely wire studs to runners.

(4c) Securely anchor 1 in. channel runners at floor and ceiling with lag screws or toggle bolts. Align channel runners in a vertical plane. Studs shall be cut to length, spaced 20 1/2 in. o. c., and spliced by bending separate shoes of a narrower channel or bar and wiring these to studs and runners.

Note: (4a), (4b), (4c) above are optional methods.

(4d) The first stud shall be erected against a structural wall and substantially secured. Attach to this stud Thermax Clips spaced approximately 12 in. apart o. c., loops outward.

(4e) In the first panel set in 1 in. thick Thermax Slabs, end to end from floor to ceiling inserting the edge next the wall stud in the clip loops. Secure the edges of slabs next to the second stud with Thermax Clips with loops outward. Erect subsequent Thermax panels in similar manner.

(4f) Place a stud at all opening bucks extending from floor to ceiling and secure to buck.

(4g) Accurately fit Thermax Slabs at ceilings, openings, etc., and around conduits, outlet boxes, etc. Where necessary, form pipe and conduit space with studs. Cover all pipe spaces, conduits, etc., with metal lath strips tacked to Thermax.



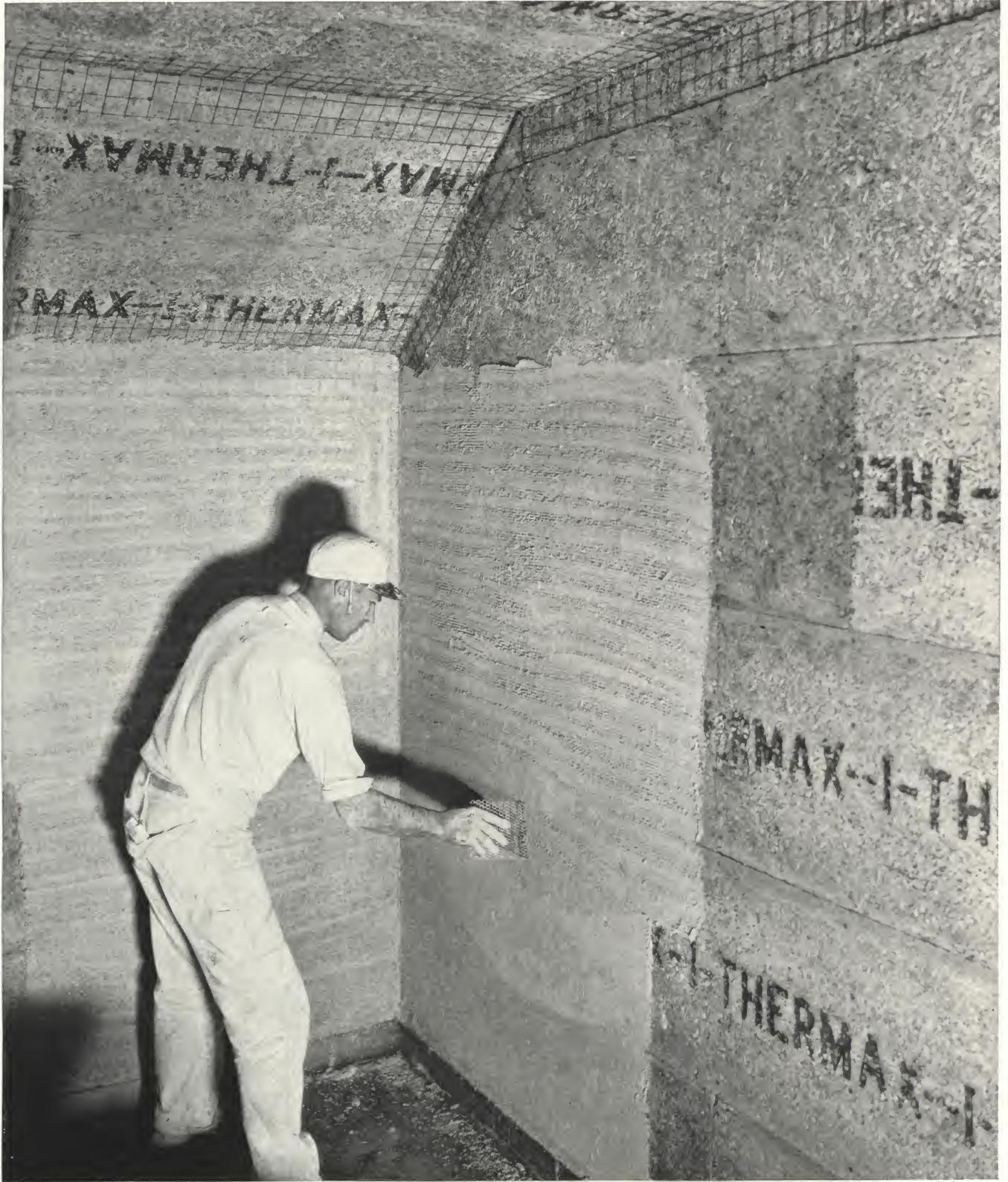
2 In. Thick Steel Stud and Thermax Partition Ready for Plaster—Rapidly Erected and Economical in Cost



2 In. Thick Thermax Plank Partitions 9 and 8 Ft. High—No Studs Required—Note Provision for Conduit

Fireproof—Light Weight—Sound Insulating





One-inch Thermax Fireproofing Insulation Used for Plaster Base
20 Houses—Bonneville Dam, Bonneville, Oregon; Hollis Johnston, Architect, Portland, Oregon



Two-inch Thermax Suspended Ceiling Construction for Plaster Base, Insulation, and Sound-proofing
French Hospital, New York City—Crow, Lewis and Wick, Architect; C. F. Neergaard, Consultant



Thermax Suspended Ceiling to Which Is Cemented Absorbex Type "A" for Acoustical Treatment
Jackson County Court House, Kansas City, Mo.—Keene and Simpson, Architects

ABSORBEX ACOUSTICAL CORRECTIVE

Incombustible—Moistureproof—Permanent

● **DESCRIPTION**—Absorbex (Thermax) is a cement-timber product, made by a process which shreds timber into long tough fibers, then passes them through a binding emulsion of high temperature cement. The entire mass is then formed between rolls and steel belts at a temperature of 500 degrees F. into incombustible slabs, uniform in thickness, containing millions of minute air cells, affording high insulation, great structural strength, fireproofness, and superior acoustical value.

● **TYPES OF ABSORBEX**—There are three types of Absorbex—Types “A,” “B,” and “C”—depending upon the fineness of the fibers and their treatment. All types of Absorbex are strong and are not easily fractured; they are inert to temperature and humidity changes, can be repainted many times with lead and oil paint without loss of efficiency, have high light reflection and are incombustible.

Type “A”—Type “A” Absorbex is furnished in tile form 9x9, 9x18, and 18x18 in. or multiples thereof, beveled or unbeveled. It may be cemented to concrete, plaster, or Thermax backing, or placed on furring strips. Its sound absorption coefficient ranges from .51 at 512 frequency to .98, depending upon the method of application necessary to meet the acoustical requirements of the individual job. Its natural light buff color will blend with any decorative scheme, or it may be painted any color desired, without loss of efficiency.

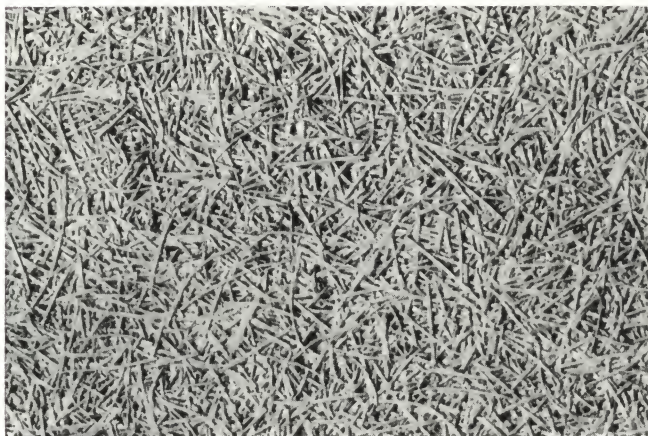
Type “B”—Type “B” Absorbex is similar to Type “A” in appearance, but the texture is not as uniform and the porosity is slightly greater than that of Type “A.” It has an absorption range of .48 at 512 cemented direct to plastered surface, or .72 if applied on furring strips, with a resultant noise reduction coefficient of .65.

Type “C”—Type “C” Absorbex, because of its excellent absorption efficiency, incombustibility, and economy, is ideal for use in high ceiling construction, such as gymnasiums, armories, auditoriums, etc. It is applied in board or slab form (no bevel) and may be satisfactorily placed in concrete forms without mechanical ties.

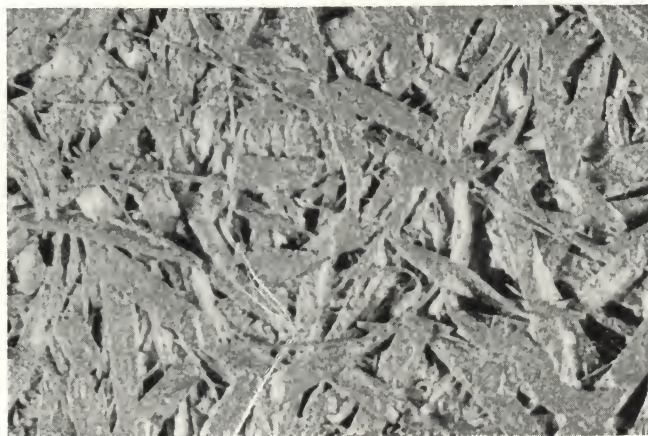
● **SOUND ABSORPTION AND METHOD OF INSTALLATION**—Since the method of erection or application of Absorbex has a direct bearing on the absorption values obtained, these various materials, method of erection, and the absorption coefficients obtained thereby are shown in details on the opposite page. All tests and ratings are by the Official Laboratories of the Acoustical Materials Association.

● **FLAME TEST**—Standard flame tests as required by the Departments of Buildings, New York City for determining the fire resisting qualities of acoustical materials were conducted by Columbia University on Thermax. This test consisted of the application of a semi-luminous flame from an air-gas burner with $\frac{3}{4}$ -in. nozzle to the exposed surface. Temperature was gradually increased to 1700 degrees F. for one-half hour and maintained at this temperature for an additional ten-minute period. Temperatures were recorded by Thermo-couples. The material did not flame or give off smoke or noxious fumes—thus rating the material incombustible, permitting its unlimited use in fireproof construction.

● **SALES AND SERVICE**—Absorbex is brought to you through carefully selected contractors who are skilled in its application and have thorough knowledge of the engineering principles as applied to architectural acoustics and sound isolation.



TYPE “A” ABSORBEX—FULL SIZE



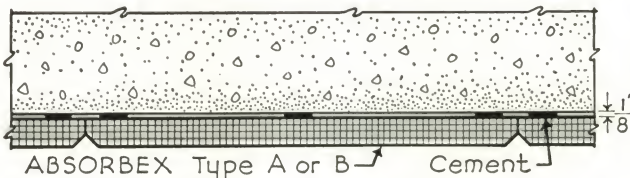
TYPE “C” ABSORBEX—FULL SIZE

SOUND ABSORPTION COEFFICIENTS

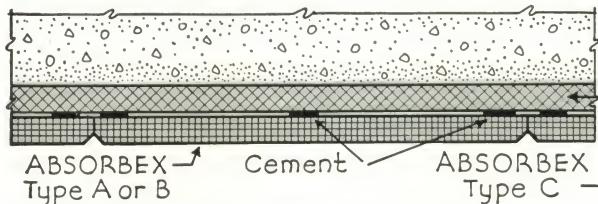
The absorption coefficients of Absorbex as given in the table below are the results obtained in the Unified Tests conducted by the Official Laboratories of The Acoustical Materials Association.

Detail No.	Description Exposed Surface Painted with Oil Paint	Thick-ness	Coefficients					
			128	256	512	1024	2048	Reduction
1	Absorbex, Type A, Painted 2 Coats	1-in.	.07	.22	.51	.91	.77	.60
2	Absorbex, Type A, Painted 2 Coats	1-in.	.21	.38	.71	.94	.80	.70
3	Absorbex, Type A (1-in.) Spot Cemented to Type C (1-in.), Painted 2 Coats	2-in.	.32	.50	.95	.96	.80	.80
3	Same as above, Painted 8 Coats	2-in.	.29	.54	.95	.96	.78	.80
2a	Absorbex, Type A, Space Between Strips Rock Wool Filled, Painted 2 Coats	2-in.	.58	.77	.98	.92	.79	.85
1	Absorbex, Type B, Painted 2 Coats	1-in.	.20	.25	.48	.83	.79	.60
2	Absorbex, Type B, Painted 2 Coats	1-in.	.25	.32	.72	.87	.78	.65
4	Absorbex, Type C, Painted 2 Coats	1-in.	.11	.17	.49	.68	.63	.50
4a	Absorbex, Type C, Space Between Strips Rock Wood Filled, Painted 2 Coats	2-in.	.45	.69	.81	.64	.64	.70
5	Absorbex, Type C, Painted 2 Coats	2-in.	.21	.44	.85	.70	.72	.70

ABSORBEX INSTALLATION DETAILS

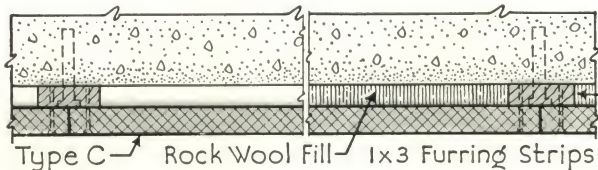


No. 1 ABSORBEX Type A or B
1" Beveled Tile, painted two coats, spot cemented to the plaster or cement ceiling.

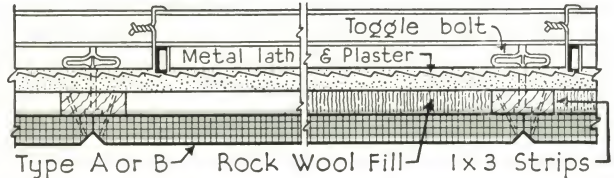


No. 3 ABSORBEX Type A or B 1" Beveled Tile, painted two coats and spot cemented to ABSORBEX Type C (1"x 20"x 64")

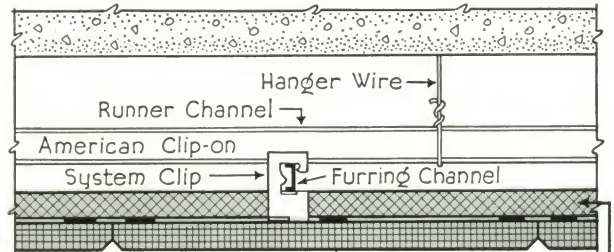
Note: The type C material may be either laid in the forms at the time the concrete is poured or securely attached afterwards directly to the concrete slab with expansion bolts or dryvins.



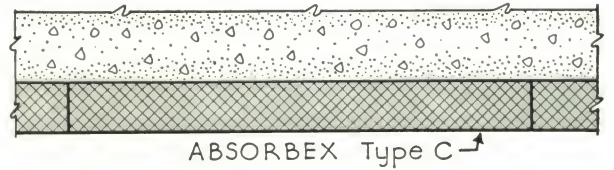
No. 4 ABSORBEX Type C (1"x 20"x 64") unbeveled, painted two coats, nailed to 1x3 furring strips, toggle or bolted to ceiling.



No. 2 ABSORBEX Type A or B 1" Beveled Tile painted two coats, nailed to 1x3 furring strips Furring strips toggle bolted to ceiling.



SUSPENDED CEILING CONSTRUCTION
ABSORBEX Type A or B, 1" Beveled Tile painted two coats, spot cemented to suspended ABSORBEX Type C (1"x 20"x 64")



No. 5 ABSORBEX Type C (2"x 20"x 64") unbeveled, laid in concrete forms, painted two coats after forms are removed.

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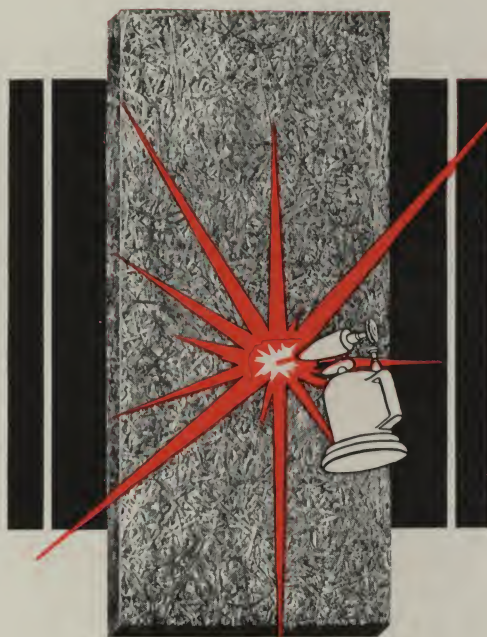
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1962 - 2011

THERMAX

The FIREPROOFING INSULATION

ABSORBEX

ACOUSTICAL CORRECTIVE



SPECIFICATIONS

AND

TECHNICAL DATA

1936 *Edition*